DEPARTMENT OF LABOR

Occupational Safety and Health Administration

29 CFR Parts 1910 and 1915

[Docket No. OSHA-S049–2006–0675 (formerly OSHA Docket No. S–049)]

RIN 1218-AB50

General Working Conditions in Shipyard Employment

AGENCY: Occupational Safety and Health Administration (OSHA), Labor.

ACTION: Proposed rule.

SUMMARY: OSHA proposes to revise the standards on general working conditions in shipyard employment. The proposed revisions would update existing requirements to reflect advances in industry practices and technology. The proposal also would cross reference general industry standards either that are already applicable to shipyard employment or that OSHA intends to apply. Finally, OSHA proposes to add provisions that would provide protection from hazards not addressed by existing standards, including provisions on the control of hazardous energy (lockout/tagout).

DATES: Comments and requests for hearings must be submitted (postmarked, sent or received) by March 19, 2008.

ADDRESSES: You may submit comments, identified by Docket No. OSHA-S049–2006–0675, by any of the following methods:

Electronically: You may submit comments and attachments electronically at *http://www.regulations.gov*, which is the Federal eRulemaking Portal. Follow the instructions on-line for making electronic submissions.

Fax: If your comments, including attachments, do not exceed 10 pages, you may fax them to the OSHA Docket Office at (202) 693–1648.

Mail, hand delivery, express mail, messenger or courier service: You must submit three copies of your comments and attachments to the OSHA Docket Office, Docket No. OSHA–S049–2006–0675, U.S. Department of Labor, Room N–2625, 200 Constitution Avenue, NW., Washington, DC 20210; telephone (202) 693–2350 (OSHA's TTY number is (877) 889–5627). Deliveries (hand, express mail, messenger and courier service) are accepted during the Department of Labor's and Docket Office's normal business hours, 8:15 a.m.–4:45 p.m., e.t.

Instructions: All submissions must include the Agency name and the docket number for this rulemaking (Docket No. OSHA-S049–2006–0675). All comments, including any personal information you provide, are placed in the public docket without change and may be made available online at *http://www.regulations.gov*. Therefore, OSHA cautions you about submitting personal information such as social security numbers and birthdates. For further information on submitting comments, plus additional information on the rulemaking process, see the ''Public Participation'' heading in the **SUPPLEMENTARY INFORMATION** section of this document.

Docket: To read or download comments and materials submitted in response to this **Federal Register** notice, go to Docket No. OSHA-S049–2006–0675 at *http://regulations.gov* or the OSHA Docket Office at the address above. All comments and submissions in response to this **Federal Register** notice are listed in the *http://regulations.gov* index; however, some information (e.g., copyrighted material) is not publicly available to read or download through the Web page. All comments and submissions, including copyrighted material, are available for inspection and copying at the OSHA Docket Office.

For information on reading or downloading exhibits referenced in this **Federal Register** notice, see the ''References and exhibits'' and ''Public Participation'' headings in the **SUPPLEMENTARY INFORMATION** section of this document.

Electronic copies of this **Federal Register** document are available at *http://www.regulations.gov*. This document, as well as news releases and other relevant information, also are available at OSHA's Web page at *http://www.osha.gov*

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SUPPLEMENTARY INFORMATION:

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References and Exhibits

In this **Federal Register** notice, OSHA references documents in Docket No. OSHA-S049–2006–0675 (formerly OSHA Docket No. S–049) as well as documents in the following OSHA rulemakings and advisory committee proceedings, which OSHA is incorporating by reference into the docket of this rulemaking:

- The proceedings of the Shipyard Employment Standards Advisory Committee (SESAC) (Docket Nos. SESAC–1988 through SESAC–1993);
- The proceedings of the Maritime Advisory Committee for Occupational Safety and Health (Docket Nos. MACOSH–1995 through MACOSH–2005);
- The General Industry Lockout/Tagout rulemaking record (Docket Nos. S–012, S–012A and S–012B;
- The Shipyard Employment Standards rulemaking record (Docket No. S–024); and
- The Field Sanitation rulemaking record (Docket No. H–308).

References to documents in Docket No. OSHA-S049–2006–0675. In this **Federal Register** notice, references to documents in Docket No. OSHA-S049–2006–0675 (formerly OSHA Docket No. S–049) are given as ''Ex.'' followed by the number of the document. These exhibits are posted in both Docket No. OSHA-S049–2006–0675 (which is available at *http://www.regulations.gov*) and OSHA Docket No. S–049 (which is available at *http://dockets.osha.gov*). The referenced exhibits are also available for inspection and copying at the OSHA Docket Office (see **ADDRESSES** section).

References to documents in the dockets incorporated by reference. In this **Federal Register** notice, references to documents in the dockets listed above that OSHA is incorporating by reference are given as the docket number followed by the document number. Thus, the reference to ''Docket H–308, Ex. 1'' means Exhibit 1 in the Field Sanitation rulemaking docket. For access to exhibits in OSHA Docket H–308 and the other dockets above that OSHA is incorporating by reference, go to OSHA's Webpage at *http://*

dockets.osha.gov or the OSHA Docket Office (see **ADDRESSES** section).

I. Background

OSHA is proposing to revise and update the existing standards in subpart F of 29 CFR part 1915 that address hazardous working conditions in shipyard employment. These standards cover many diverse working conditions in shipyard employment, including housekeeping, lighting, utilities, work in confined or isolated spaces, lifeboats, sanitation and medical services and first aid.

OSHA also proposes to add new requirements to subpart F to protect employees from hazardous working conditions not currently addressed by subpart F. These proposed additions include the control of hazardous energy (lockout/tagout), safe operation and maintenance of vehicles, accident prevention signs and tags and servicing of multi-piece and single piece rim wheels.

OSHA adopted the existing subpart F standards in 1972 (37 FR 22458 (10/19/1972)) pursuant to section 6(a) of the Occupational Safety and Health Act of 1970 (OSH Act) (29 U.S.C. 651 *et seq.*). Section 6(a) permitted OSHA, within two years of the passage of the OSH Act, to adopt as an occupational safety or health standard any national consensus and established Federal standards. The provisions in subpart F were adopted from existing Federal regulations promulgated under Section 41 of the Longshore and Harbor Workers' Compensation Act (LHWCA) (33 U.S.C. 941) as well as national consensus standards.

OSHA believes the revisions and additions to subpart F that it proposes are necessary and appropriate to protect the safety and health of shipyard employees. OSHA's reasons for the necessity of the proposed standard are discussed below.

Hazards

Working in shipyards is one of the riskiest occupations in the United States. Shipyard employees are at risk due to the nature of their work, which includes a wide variety of industrial operations, such as steel fabrication, welding, abrasive blasting, burning, electrical work, pipefitting, rigging and stripping and coating applications. They also operate complex or heavy equipment such as cranes and powered industrial trucks. The hazards associated with these work activities are heightened because they are often performed outdoors in all kinds of weather, onboard vessels, in confined or enclosed spaces below deck, on scaffolds and on busy and crowded docks filled with equipment and material. The safe coordination of these work activities is also complicated by the fact that most shipyards are multi-employer worksites where shipyard employees, ship's crew, contractors and subcontractors work side-by-side and often on the same ship's systems at the same time. The combination of these hazards presents a significant risk of injury to shipyard employees whether they are working on vessels or at landside operations. As this section illustrates, OSHA believes the proposed rule will significantly reduce those risks.

Accident, Fatality and Injury Data

OSHA examined several data sources to identify and characterize the risks shipyard employees face from the hazards this proposal addresses. These data show, for example, that the shipyard industry has one of the highest rates and severity of workplace injury of all private sector industries.

Fatalities. To identify shipyard fatalities, OSHA reviewed accident data from OSHA's Integrated Management Information System (IMIS) accident database (fatal and serious injury requiring hospitalization) and the Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI). According to the IMIS data, there were 231 fatal shipyard accidents during the years 1987–2002, which is an average of 15 shipyard fatalities each year (Ex. 13). This estimate is consistent with CFOI, which reported 155 shipyard fatalities from 1992–2002 or an average of 14 fatalities per year. According to CFOI data, during most of those years the fatality rate in shipyard employment was about twice the rate for all private industry combined, which further demonstrates the hazardous nature of work in shipyard employment. As discussed below, many of those shipyard fatalities involved the types of hazards this rulemaking addresses.

Injuries and illnesses. To estimate the number of shipyard injuries and illnesses, OSHA used the BLS annual survey of employers, which produces statistical estimates of occupational injuries and illnesses by industry and specific characteristics (*www.bls.gov*). From 1992–2002, BLS data show that the occupational injury and illness rate for shipyard employment declined from 34.2 per 100 full-time employees in 1992 to 16.6 in 2002. Lost workday injury and illness rates showed a similar trend, declining from 16.9 in 1993 to 9.3 in 2002 (See Table 1). However, despite these improvements, the industry's injury and illness rates continue to be more than three times the average private sector rate of 5.3 for injuries and illnesses combined and 2.8 for lost workday cases (Table 1).

Using the median number of days away from work per case as an indicator of severity, the injuries and illnesses shipyard employees experienced were, on average, more severe than those in the private sector as a whole as well as in the manufacturing and construction sectors. In 2002, for example, the median days away from work in the shipbuilding and repair industry was 15 days per lost workday case, more than double the private sector median of seven (Table 1). In addition, a higher percentage of lost workday cases in shipyards involved lengthy recovery periods. For example, more than one-third (34%) of shipyard lost workday cases resulted in more than 30 days away from work compared to one-quarter of private sector cases (Table 1).

TABLE 1.—2002 INJURY AND ILLNESS DATA COMPARISONS

Industry	Injury and illness rate per 100 full-time employees	Lost workday (LWD) injury and illness rate per 100 full-time employees	Median days away from work	Percentage of LWD cases involving more than 5 days away from work	Percentage of LWD cases involving more than 30 days away from work
Shipbuilding and Repair	16.6	9.3	15	62.2	34.1
Total Private Sector	5.3	2.8	7	55.2	25.1
Manufacturing	7.2	4.1	8	56.7	26.0
Construction	7.1	3.8	10	58.4	28.9

(Source: BLS)

Need for Agency Action

A detailed examination of OSHA and BLS databases indicates that a significant percentage of shipyard fatalities and injuries have resulted from the types of hazardous working conditions the proposed rule addresses, particularly hazardous energy. OSHA believes that eliminating or controlling these hazardous conditions will reduce the risks that shipyard employees face on a daily basis. This section discusses the types of fatalities and injuries that could have been prevented if the proposed additions and revisions to subpart F had been in place. OSHA's preliminary economic analysis, summarized in Section V, estimates that the proposed rule would have prevented at least 17.8 of the fatalities reported in the IMIS database from 1987 through 2002.

Lockout/tagout. The most extensive provisions in the proposal address the control of hazardous energy. Exposure to hazardous energy has resulted in many injuries to shipyard employees. According to a study by the National Shipbuilding Research Program (NSRP), during a five-year period there were 10 hazardous energy-related injuries annually at the seven participating shipyards. (See Ex. 11, NSRP ''Review of Current and Best Practices for Hazardous Energy Control (Tagout) in Shipyards.'') The report concluded that in almost every case, the injury was the result of multiple failures in the system, such as failure to identify all hazardous energy sources and to properly verify deenergization of all sources (Ex. 11, p. 6). This report suggests that the proposed comprehensive lockout/tagout program and energy control procedures would be effective in preventing these types of injuries.

Hazardous energy exposure also has resulted in the death of a number of shipyard employees. According to BLS data for 1992–2002, almost one-quarter of shipyard fatalities were types that are often associated with hazardous energy. BLS CFOI data showed that at least 10 shipyard fatalities (6.3%) resulted from contact with electrical current and 24 fatalities (16%) occurred because of contact with objects and equipment, such as being caught in equipment that suddenly starts up. BLS injury data showed that an even greater percentage of injuries were associated with those types of accidents. In 2002, for instance, 30 percent of shipyard injuries involving days away from work resulted from contact with an object or equipment and almost two percent resulted from being caught in equipment.

OSHA's IMIS fatal accidents database also confirms that a significant number of shipyard deaths have resulted from hazardous energy. From 1987–2002, the IMIS data reported 14 (6%) shipyard fatalities related to the sudden release of hazardous energy. (See also, Ex. 11, National Shipbuilding Research Program (NSRP), ''Review of Current and Best Practices for Hazardous Energy Control (Tagout) in Shipyards.'') A review of the IMIS shipyard fatality abstracts indicates that the proposed lockout/tagout provisions could have prevented the vast majority (9) of those hazardous energy deaths (see Section V). The following are some of the shipyard fatalities that the proposed lockout/tagout provisions could have prevented. (The summary and explanation of proposed § 1915.89 also discusses a number of fatalities that could have been prevented by the proposed lockout/tagout provisions).

A shipyard employee working on a 480-volt distribution center was fatally electrocuted when the circuit was not properly deenergized and locked out before the task was started. In a similar case, an employee was electrocuted installing a fan on an HVAC chiller because the fan circuit was not deenergized. Instead of verifying that the circuit was deenergized, the employee had relied on a helper to open the circuit breaker to deenergize the unit. However, the helper opened the wrong breaker. In both cases, there was no indication in the IMIS abstract that the employer had a lockout/tagout program or had established written energy control procedures, such as procedures for deenergizing power sources and verifying isolation. The lockout/tagout proposal would have required both.

In another case in the IMIS database, an employee, who was assigned to perform maintenance on a high-voltage electric transformer, was fatally electrocuted when an oil switch to the transformer was left open. According to a NIOSH Fatality Assessment and Control Evaluation Program (FACE) investigation of the accident, the high-voltage transformer provided power to numerous shipboard activities, but the employee's electrical experience had been primarily on low-voltage equipment (Ex. 14). The investigation revealed that the power panels were not labeled and no signs, tags or locks had been used on either the oil switch or circuit breaker. In addition, there may have been stored energy remaining in the conductors, but no tests were conducted to verify deenergization. Under the proposed lockout/tagout provisions, this employer would have been required to have an energy control program and control procedures in place to ensure that employees properly deenergize circuits, verify isolation and apply lockout or tagout systems before starting work (proposed § 1915.89(b)(1), (2) and (4)).

The investigation also found that, although employees received general safety training, there was no indication that the victim had received training on servicing high-voltage equipment and the supervisor had no electrical training. Moreover, even when the victim accidentally turned off the wrong power source earlier in the workshift, leaving the dry dock in the dark, the employee was not provided with refresher training. Had the proposed lockout/tagout provisions been in place, it would have ensured that any shipyard employee servicing high-voltage equipment was an ''authorized employee'' who had been trained to recognize hazardous energy sources and know the specific means and procedures necessary to isolate and control such energy safely (proposed § 1915.89(b)(7)). The proposed provisions also would have ensured that employees receive additional training ''whenever the employer has reason to believe, that there are * * * deficiencies in the employee's knowledge or use of the energy control procedures'' (proposed § 1915.89(b)(7)(iii)).

The proposed lockout/tagout provisions addressing multiple employer worksites (proposed § 1915.89(e)(2)) and group lockout/tagout (proposed § 1915.89(e)(3)) also could have prevented several shipyard fatalities reported in the IMIS database. In one of those cases, an electrician who was modifying a switchboard was fatally electrocuted when a ship's crew member, who was not familiar with the operation of the switchboard breaker, inadvertently energized the circuit. The proposed provisions would have ensured that the shipyard employer and ship's officer or master shared information about their respective lockout/tagout programs. The proposal also would have ensured that when more than one person is servicing equipment on a system, that a primary authorized employee is designated to ascertain the exposure status of individual group members and coordinate affected work forces to ensure that each member of the group is fully protected (proposed § 1915.89(e)(3)).

Finally, the lockout/tagout section of this proposal includes an in-depth

discussion of the application of the lockout/tagout standard while servicing commercial vessels, such as fish processing vessels.

Motor vehicle safety equipment, operation and maintenance. OSHA is proposing several provisions aimed at reducing the number of shipyard employees killed and injured in motor vehicle incidents. According to CFOI data, 27 shipyard employees were killed in transportation incidents (highway and non-highway) from 1992–2002, which represents 18.5 percent of all fatalities during that period. OSHA's IMIS fatal accidents data indicated that 12 employees were killed in motor vehicle incidents in shipyards from 1987–2002. Motor vehicle accidents also account for a significant number of injuries. From 1992–2001, for instance, BLS reported that 208 shipyard employees were injured in transportation accidents that were serious enough to involve days away from work.

OSHA believes that the proposed motor vehicle safety provisions could have prevented a significant number of those deaths and injuries. For example, a review of the IMIS database shows that the proposed safety belt requirement (proposed § 1915.93(b)(1) and (2)) could have prevented the death of a shipyard employee who was operating a mobile crane to lift metal plates from a floating dock. The employee was killed when the crane overturned and he fell from the cab into the river and drowned. Had the employee been wearing a safety belt, as the proposed rule requires, he would have remained safely within the cab when it overturned. OSHA also believes the proposed safety belt provision would prevent employees from being crushed or pinned trying to jump free of a tipping vehicle, one of the major causes of industrial vehicle fatalities. In 2001, for example, BLS reported that 28 percent (35) of all private industry forklift fatalities (123) involved tipovers or falls from a moving forklift.

The proposed provisions to protect pedestrians and bicyclists in shipyards from being hit by motor vehicles (proposed § 1915.93(c)(3)) could have prevented several shipyard fatalities and injuries reported in the IMIS database. For example, a shipyard employee riding a bicycle as part of ''his regularly assigned tasks'' was killed when a bus traveling on the same shipyard road collided with him. A shipyard employee walking on a pier was killed when a straddle lift truck ran over him. While pulling onto the main road on the pier, the lift truck driver made a wide arc in order to avoid hitting a forklift truck moving a large container and hit a pedestrian who he had not seen. In another incident, a shipyard employee suffered fractured ribs and had to have his spleen removed when he was hit by a forklift as he was walking along the side of the road in the shipyard. All of these accidents may have been prevented if the employers had established dedicated pedestrian/bicycle lanes or provided employees with reflective vests, two of the options the proposal includes to protect employees walking and bicycling in shipyards from being hit by motor vehicles (proposed § 1915.93(c)(3)(i) and (ii)).

Medical services and first aid. The proposed rule includes revisions to the existing provisions on medical services and first aid, including revisions addressing the content of first aid training and location of first aid providers and kits in shipyards (proposed § 1915.88). OSHA believes that the proposed provisions will improve the chances that injured shipyard employees will survive if an accident or health crisis (e.g., cardiac or respiratory failure) occurs and are necessary to reduce fatality rates in the shipyard industry. A review of the IMIS database for 1987–2002 indicates that as many as 13 fatalities involving cardiac or respiratory arrest may have been prevented had the proposed first aid provisions been in place.

Accounting for employees at the end of workshifts. Existing shipyard standards require that employers frequently check on employees who are working in confined spaces or alone in an isolated work location (§ 1915.94). The proposal adds to the existing standard a provision requiring employers also to account for these employees at the end of the workshift (proposed § 1915.84(b)). The purpose of both the existing and proposed provisions is to ensure that employees remain safe, go home safe at the end of their workshifts and are promptly rescued if they are injured. OSHA believes it is necessary to account for these employees at the end of their workshifts, in part, because shipyards are commonly comprised of many work locations that often are spread out over a large area. If an employee is injured while working alone at a distant work location, he may not be able to summon help. If the employer does not account for an injured employee at the end of the workshift, that employee could die from his injuries. The IMIS database includes a number of fatalities in which the employees' bodies were not discovered until hours or days later.

A review of the IMIS database, from 1987 to 2002, indicates that there were at least 13 fatalities that may have been prevented had the proposed provisions been in effect. The following are a few cases from that IMIS database. At approximately 10 p.m. during an evening workshift, a shipyard employee using a forklift truck to move a heavy tool box on a wet dock is presumed to have fallen through an opening in the dock and drowned when he got out of the forklift to check on the load. According to the abstract there were no eye witnesses to the accident. There is also no indication as to when the employer first noticed the employee was missing. However, the abstract says that the employee's body was not removed from the water until the next day.

In another case, the employee was working alone applying a patch over a pipe opening prior to the time he went missing. There is no indication as to when the employer discovered the employee was missing and no indication whether the employee was checked on during or at the end of his workshift. Approximately one week later his body was discovered under the water adjacent to the vessel on which he had been working.

Finally, a shipyard employee was working on an accommodation ladder on the MV Cape Henry at Pier 27 in San Francisco. It is presumed that he fell off the ladder or the vessel into the water. Nine days later his body was discovered floating in Fisherman's Wharf. Again, there is no indication in the abstract whether the employer regularly checked on employees or accounted for them at the end of the workshift.

Clarifications. In addition to the shipyard fatalities and injuries discussed above, OSHA believes that other provisions in the proposal could also prevent employees from being injured or killed. A number of proposed provisions clarify existing requirements, which may help increase employer understanding of and compliance with those requirements and thereby reduce employee exposure to serious hazards.

Based on the data and discussion above and other information in the rulemaking record, OSHA believes that there continues to be a significant risk of death and injury due to hazardous working conditions in shipyards. As discussed, OSHA believes that the proposed revisions, additions and clarifications of subpart F are reasonable and necessary and will substantially reduce that risk for shipyard employees.

II. Regulatory History

The standards in subpart F have remained essentially unchanged since

they were adopted in 1972 from established Federal occupational safety and health standards issued under the LHWCA (33 U.S.C. 941).

In 1982, the Shipbuilders Council of America and the American Waterways Shipyard Conference requested that OSHA: (1) revise and update the existing shipyard standards, including subpart F; and (2) consolidate into a single set of shipyard standards those general industry standards that apply to shipyards, particularly landside operations. In response to these recommendations, OSHA established the Shipyard Employment Standards Advisory Committee (SESAC) in November 1988. The purpose of SESAC, which included representatives from industry, labor and professionals in the maritime community, was to provide guidance and technical expertise to OSHA about revising the shipyard standards. SESAC met from 1988 until 1993 to develop recommendations and provide technical expertise in developing draft regulatory language for revising the shipyard safety standards. On April 29, 1993, SESAC unanimously approved final draft recommendations for revising subpart F to submit to OSHA. (Docket SESAC 1993–2, Ex. 102X, p. 257) (Detailed discussion on SESAC comments and specific recommendations are presented in the Summary and Explanation section below.)

In 1995, OSHA established the Maritime Advisory Committee for Occupational Safety and Health (MACOSH) under section 7 of the OSH Act (29 U.S.C. 656) to advise the Agency on issues relating to occupational safety and health standards in the shipyard and marine cargo handling (longshore) industries. On September 8, 1995, MACOSH discussed and approved the recommendations and draft regulatory language that SESAC developed and made additional recommendations, which are discussed in the Summary and Explanation section below (Docket MACOSH 1995–1, Exs. 2; 102X, pp. 25, 26).

While OSHA is continuing to move toward a single set of standards for the shipyard industry, OSHA has included in part 1915 cross references to applicable general industry standards rather than reprinting those standards in this part. The proposal, for instance, includes cross references to general industry standards addressing accident signs and tags and servicing multi-piece and single piece wheels.

III. Pertinent Legal Authority

The purpose of the OSH Act is to ''assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources'' (29 U.S.C. 651(b)). To achieve this goal, Congress authorized the Secretary of Labor to issue and enforce occupational safety and health standards. (See 29 U.S.C. 655(a) (authorizing summary adoption of existing consensus and federal standards within two years of the OSH Act's enactment); 655(b) (authorizing promulgation of standards pursuant to notice and comment); and 654(d)(2) (requiring employers to comply with OSHA standards)). A safety or health standard is a standard ''which requires conditions, or the adoption or use of one or more practices, means, methods, operations, or processes, reasonably necessary or appropriate to provide safe or healthful employment or places of employment'' (29 U.S.C. 652(8)).

A standard is reasonably necessary or appropriate within the meaning of section 3(8) of the OSH Act if it substantially reduces or eliminates significant risk; is economically feasible; is technologically feasible; is cost effective; is consistent with prior Agency action or is a justified departure; is supported by substantial evidence; and is better able to effectuate the Act's purposes than any national consensus standard it supersedes (29 U.S.C. 652). (See 58 FR 16612, 16616 (3/30/1993)).

A standard is technologically feasible if the protective measures it requires already exist, can be brought into existence with available technology, or can be created with technology that can reasonably be expected to be developed. *American Textile Mfrs. Institute* v. *OSHA (ATMI),* 452 U.S. 490, 513 (1981); *American Iron and Steel Institute* v. *OSHA (AISI),* 939 F.2d 975, 980 (D.C. Cir 1991).

A standard is economically feasible if industry can absorb or pass on the cost of compliance without threatening its long term profitability or competitive structure. See *ATMI,* 452 U.S. at 530 n. 55; *AISI,* 939 F.2d at 980. A standard is cost effective if the protective measures it requires are the least costly of the available alternatives that achieve the same level of protection. *ATMI,* 453 U.S. at 514 n. 32; *International Union, UAW* v. *OSHA (''LOTO II''),* 37 F.3d 665, 668 (D.C. Cir. 1994).

Section 6(b)(7) of the OSH Act authorizes OSHA to include among a standard's requirements labeling, monitoring, medical testing and other information gathering and transmittal provisions (29 U.S.C. 655(b)(7)).

All safety standards must be highly protective. (See, 58 FR 16614–16615; *LOTO II,* 37 F.3d at 668.) Finally, whenever practical, standards shall ''be expressed in terms of objective criteria and of the performance desired'' (29 U.S.C. 655(b)(5)).

IV. Summary and Explanation of the Proposed Standard

As mentioned above, OSHA proposes to revise and update the standards in subpart F to reflect advances in technology and industry practice and to add requirements that would provide employees with protection from hazardous working conditions not currently addressed by the existing OSHA standards. This section explains the revisions and additions OSHA proposes, including what action these revisions would require or prohibit and how they differ from the existing standards. This section also discusses the purposes for these changes and why they are necessary, and how they will provide employees with protection from hazardous working conditions in shipyards.

Many of the provisions OSHA proposes were recommended by SESAC. They represent, to a large extent, industry best practices at the time SESAC reviewed subpart F. However, where changes in industry practices and technology have occurred since SESAC finished its review, OSHA has updated the proposed provisions to reflect those advances. In addition, the Agency has added or amended some provisions for easier comprehension and to better protect employees.

A number of the provisions in subpart F were adopted in 1972 from existing Federal and national consensus standards in effect at the time (e.g., housekeeping, sanitation, medical services and first aid). Since then, those consensus standards have been revised and updated, several times in some cases. OSHA has carefully reviewed the relevant consensus standards and, where appropriate, proposes to incorporate applicable requirements of updated and revised standards.

OSHA proposes to consolidate a number of provisions to more clearly indicate that they apply to shipyard employment and to make them easier to understand and follow. First, the proposal consolidates requirements in part 1915 (e.g., housekeeping, sanitation, medical services and first aid) for which there are also requirements in general industry (part 1910) that shipyard employers must follow. Although as a general rule part 1915 standards prevail over any different general industry standard, general industry standards apply to shipyard employment where part 1915 standards do not address a particular

hazard or condition. For example, a number of provisions in the general industry sanitation standard (e.g., potable water, toilet facilities, vermin control) apply to shipyard employment because the shipyard sanitation standard (§ 1915.97) does not address these issues. OSHA believes that putting all of the sanitation requirements applicable to shipyard employment into one section will make it easier for employers to understand and comply with the requirements.

Second, the proposal cross references several general industry standards that already apply to shipyard employment (e.g., § 1910.144 Safety Color Code for Marking Physical Hazards). Finally, the proposal consolidates into one section (§ 1915.80) the scope and application provisions for subpart F and clarifies that the proposal intends to apply the general working condition provisions to all sectors of shipyard employment (i.e., ship repair, shipbuilding, shipbreaking and related employment).

As a result of the consolidation, the section numbers in subpart F would be changed. To prevent confusion, the following table (Table 2) lists the proposed and corresponding existing provisions, if there is one that applies:

TABLE 2.—TABLE OF PROPOSED PROVISIONS AND CORRESPONDING EXISTING PROVISIONS

Title of provision	Proposed rule	Existing rule applicable to shipyard employment
Scope and application	§ 1915.80	Each section of subpart F has a scope and application provision
Housekeeping	§ 1915.81	§ 1915.91 and § 1910.141
Lighting	§ 1915.82	§ 1915.92
Utilities	§ 1915.83	§ 1915.93
Work in confined or isolated spaces	§ 1915.84	§ 1915.94
Vessel radar and radio transmitters	§ 1915.85	§ 1915.95
Lifeboats	§ 1915.86	§ 1915.96
Medical services and first aid	§ 1915.87	§ 1915.98 and § 1910.151
Sanitation	§ 1915.88	§ 1915.97 and § 1910.141
Control of hazardous energy (lockout/tagout)	§ 1915.89	§ 1910.145
Safety color code for marking physical hazards	§ 1915.90	§ 1910.144
Accident prevention signs and tags	§ 1915.91	No existing rule
Retention of DOT markings, placards and labels	§ 1915.92	§ 1915.100
Motor vehicle safety equipment, maintenance, and operation	§ 1915.93	No existing rule
Servicing multi-piece and single-piece rim wheels	§ 1915.94	No existing rule
Definitions	§ 1915.95	No existing rule

OSHA proposes to retain a number of provisions from the existing standards with only minor editorial and technical changes. OSHA believes, and SESAC agreed, that these provisions are necessary to provide employees with adequate protection from certain hazardous working conditions in shipyards. This section does not address those provisions at length. Rather, the discussion in this section focuses on the proposed revisions and additions, one of the most important being the control of hazardous energy.

Finally, OSHA proposes to delete some provisions from subpart F, in most cases because the hazards these requirements address are not present in shipyard employment. For example, the existing provision § 1910.141(f) requires that where working clothes are provided by the employer and get wet or are washed between shifts, the employer must ensure that the clothing is dry before reuse. However, information indicates that the provision is no longer necessary for shipyard employment because employers now provide disposable protective clothing.

Where possible, OSHA has expressed the proposed requirements in performance language. In many cases, OSHA replaced outdated specifications with language that provides employers with greater flexibility in determining the most effective strategies for controlling the hazards in question. The proposal provides employers with objective criteria, where appropriate, to assist them in complying with the proposed requirements. For example, OSHA proposes to replace the list of items that first aid kits must contain, which was adopted more than 30 years ago and which SESAC said in 1993 was outdated, with flexible performance-based language and criteria employers must consider in determining the adequacy of those supplies. OSHA believes this approach contemplates changes in control strategy and allows for advances in technology and industry practice, thereby reducing the need to revise the standard when those changes occur.

OSHA requests comment on all aspects of the proposed rule. In order to develop the most thorough and useful record possible, OSHA requests interested persons to provide comments on the questions raised throughout the preamble and to provide data and reasons to support those comments.

Section 1915.80 Scope and Application

Each section in existing subpart F contains its own scope and application provision. Although most of those provisions indicate that the section applies to shipbuilding, ship repairing, and shipbreaking, some state that the section, or part(s) of it, is limited to certain shipyard operations. OSHA proposes to eliminate duplication of these provisions by consolidating them into one scope and application section that is applicable to the entire subpart. In addition, as SESAC recommended (Docket SESAC 1992–1, Ex. 100X, pp. 110–112), OSHA proposes to apply every section of subpart F uniformly to all of shipyard employment. ''Shipyard employment'' is defined in § 1915.4(i) to mean ''ship repairing, shipbuilding, shipbreaking, and related employment.''

The proposal also adds language to clarify OSHA's longstanding position that subpart F applies to shipyard employment ''regardless of geographic location'' of the shipyard activity. OSHA believes this is necessary to ensure that shipyard employers fully understand that the proposed subpart F requirements apply wherever employees are performing ''shipyard employment'' activities. (OSHA recently added the same language to the Fire Protection in Shipyards Standard, § 1915.501(b) (69 FR 55668 (9/15/2004)). Thus, if employees are performing shipyard employment activities, including but

not limited to performing them onboard vessels and vessel sections and in landside facilities on navigable waters, the proposed requirements would apply. Likewise, if employees are performing shipyard employment activities at a location that is not contiguous to a vessel, the proposed requirements also would apply.

The proposal also clarifies that subpart F applies to any employer, regardless of whether the employer owns the vessel or shipyard, whose employees perform shipyard employment activities. The existing policy will continue to apply under the revised rule. OSHA notes that the proposed change does not affect the Agency's existing multi-employer policy. Thus, if a contractor or subcontractor is hired to perform shipyard employment activities, the proposed provision would apply when employees are performing those activities. On the other hand, the proposal would not apply where the contractor's employees perform non-shipyard employment activities. For example, the proposal would apply to a contractor whose employees are installing ductwork on vessel sections or fabricating sheet metal in a shipyard facility, but would not extend to duct or sheet metal work done for other employers and customers (e.g., installing heating ductwork for an employer commercial building). Similarly, the proposal does not extend to outside contractors or employers who are at the shipyard but not performing shipyard employment activities, such as vending equipment suppliers or companies servicing portable toilet facilities. OSHA also notes that the proposal is not intended to cover inland manufacturing of boats or manufacturing of parts used to perform shipyard employment activities, which are more accurately characterized as general industry manufacturing activities covered by Part 1910 standards (Exs. 16–9, OSHA Shipyard Employment ''Tool Bag'' Directive, CPL 02–00–142; Ex. 19, Letter to John McKnight, National Marine Manufacturers Association (8/3/2001)).

The proposed consolidation of the scope provisions will simplify the subpart. It eliminates duplicative provisions and allows OSHA to remove from each section references to specific shipyard operations. (This discussion of the consolidation of the scope and application provisions eliminates the need to repeat, in the Preamble discussion of each section, that the scope and application provisions are being deleted from each section). It also ensures that employees will be provided necessary protection wherever the hazards that the proposed requirements are intended to address are present. To the extent that the hazard is not present in a particular area of shipyard employment, the proposed requirement would not apply. For example, the provisions in proposed § 1915.85 Vessel Radar and Radio Transmitters would not apply if a vessel's radar is not being repaired or does not emit any radiation.

The revisions OSHA proposes would make this subpart consistent with the scope and application of other subparts in part 1915 that OSHA has revised, including subpart I Personal Protective Equipment in Shipyard Employment (61 FR 26322 (05/24/1996)) and subpart B Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment (59 FR 37816 (07/25/1994)).

Section 1915.81 Housekeeping

OSHA proposes to retain and combine the housekeeping requirements applicable to shipyards (§ 1910.141(a)(3) and § 1915.91) and proposes to reorganize and simplify the provisions to make them easier to understand. For example, the proposal groups together similar requirements. The proposal also simplifies the language in the existing housekeeping section. Throughout the proposed section OSHA uses the term ''walking and working surfaces'' in place of the list of the specific areas and surfaces contained in the existing section. In proposed § 1915.95, OSHA defines ''walking and working surfaces'' to mean any surface on which employees gain access or perform their job duties or upon which employees are required or allowed to walk or work in the workplace. The definition contains examples of areas and surfaces that the term ''walking and working surfaces'' covers and includes all of the areas and surfaces listed in the existing housekeeping section. OSHA believes that using the umbrella term should make the housekeeping section easier to understand.

Proposed paragraphs (a) through (i) establish specific requirements to ensure walking and working surfaces are free of hazards while paragraphs (j) and (k) minimize the risk of fire or combustion in shipyard work areas. OSHA also proposes to add requirements to this section including provisions on housekeeping procedures and combustible scrap.

Paragraph (a)—In paragraph (a) OSHA proposes to retain the existing requirement that the employer maintain good housekeeping conditions to ensure that walking and working surfaces do not create a hazard for employees and that these conditions are maintained at all times. Because of the numerous hazardous materials and substances in use in shipyard operations, OSHA believes it is necessary to require shipyard employers to develop and implement good housekeeping practices to protect employees from harm. As noted above, shipyards experience many injuries, such as slips and falls, which an effective housekeeping program will help to reduce.

Paragraphs (b) and (c)—In paragraph (b) OSHA proposes to retain, with minor editorial revisions, the existing requirement (§ 1915.91(a)) that employers ensure that walking and working surfaces have adequate space for work and passage. To ensure that space is adequate, OSHA proposes in paragraph (c) to retain the existing requirement (§ 1915.91(a)) that employers ensure walking and working surfaces such as aisles and passageways be kept clear of tools, materials and equipment not in use. Specifically, the proposal requires that equipment not necessary to perform the job in progress not be stored or located in an area that could interfere with walking and working surfaces. This provision is consistent with a SESAC recommendation (Docket SESAC 1992–3, Ex. 104X, pp. 110–112) that only tools, materials, and equipment ''necessary to complete the job in progress'' be allowed to be kept out. OSHA agrees with SESAC that all other tools, materials, and equipment need to be stored or located so that they do not interfere with walking and working surfaces and create hazards such as tripping, slipping or falling. MACOSH also supported the proposed addition (Docket MACOSH 1995–1, Ex. 100X, pp. 63–64). Slips, trips and falls frequently result in injuries in shipyards. As stated above, according to the BLS data for 2002, slips, trips and falls accounted for 19 percent of all injuries and illnesses involving days away from work in ship and boat building and repairing. In addition, floors, walkways, or ground surfaces were cited as the source for 801 injuries.

Paragraph (d)—In proposed paragraph (d), OSHA is retaining the existing requirement (§ 1910.141(a)(3)(ii)) that employers ensure that the floor or deck of every work area is maintained, so far as practicable, in a dry condition. Where wet processes are used, OSHA is also retaining the existing requirement that drainage be maintained and that employers provide false floors, platforms, mats or other dry standing places. Shipyard employment involves many wet processes, including gas-freeing, painting, hydroblasting and

cleaning. This provision is necessary to prevent employees from being exposed to contaminated water and from standing for prolonged periods of time in water, both of which may result in adverse health effects. However, OSHA also recognizes that in some instances it may not be possible for employers to provide a dry standing place. Therefore, OSHA proposes to retain the existing language that employers need only provide dry standing places to the extent that it is practicable to do so. Where it is not, the proposal retains the existing requirement that employers are responsible to provide any waterproof footgear that may be necessary for performing wet processes. Wearing waterproof boots while performing wet processes will protect employees from hazards associated with working in standing water that may contain contaminants and will help to prevent slips and falls.

Paragraph (e)—In paragraph (e), OSHA proposes to combine and simplify four existing requirements to keep walking and working surfaces clear of debris, including solid or liquid wastes, and other objects that may create a safety or health hazard for employees, such as protruding nails, splinters, loose boards, and unnecessary holes and openings. Existing § 1915.91(a) requires that staging platforms, ramps, stairways, walkways, aisles and passageways on vessels or dry docks be kept clear of debris. Existing § 1915.91(b) requires that working areas on and immediately surrounding vessels, dry docks, graving docks and marine railways be kept free of debris. Existing § 1910.141(a)(4)(ii) requires that all sweepings, solid or liquid wastes, refuse, and garbage shall be removed in such a manner as to avoid creating a menace to health and as often as necessary or appropriate to maintain the place of employment in a sanitary condition. In addition, existing § 1910.141(a)(3)(iii) requires that in order to facilitate cleaning, every floor, working place, and passageway shall be kept free from protruding nails, splinters, loose boards, and unnecessary holes and openings. The proposal, by using the term ''walking and working surfaces'', ensures that all areas in the shipyard are kept clear. Keeping walking and working surfaces clear will also help to ensure that employees have adequate room to move safely to and from work areas and throughout the workplace. OSHA intends that the term ''debris'' continue to include bolts, nuts, and welding rod tips as well as other objects and material that could create a safety or health hazard to employees, such as scrap metal, broken equipment, liquid wastes, tools, and empty containers.

Paragraph (f)—In paragraph (f) OSHA is proposing to retain, with only minor changes, the existing requirement (§ 1915.91(d)) that the employer maintain free access to exits, fire-alarm boxes, and fire-fighting equipment. OSHA proposes to add fire-call stations to this list based on SESAC's recommendation that access to this equipment is also essential for the protection and safe evacuation of employees (SESAC 1992–3, Ex. 104X, p. 117).

Paragraph (g)—In paragraph (g) OSHA is proposing to retain the existing requirement (§ 1915.91(c)) that slippery conditions on walkways or working surfaces shall be eliminated as they occur. The proposal also makes more explicit OSHA's position that ice and snow are included among the types of slippery conditions that employers must eliminate under the existing standard by adding language that such accumulations must be removed as they occur. OSHA believes this clarifying language is important since members of SESAC raised questions about whether the existing standard covers these conditions (Docket SESAC 1992–3, Ex. 104X, pp. 117–119). OSHA requests comment on this issue.

Paragraph (h)—In paragraph (h) OSHA proposes to retain the existing provision (§ 1915.91(b)) that construction material be stacked in a manner that does not create a hazard (e.g., trip) to employees. The proposal includes only non-substantive editorial changes.

Paragraph (i)—In paragraph (i) OSHA is proposing to retain the existing requirement (§ 1915.91(a)) that hoses and electrical service cords be hung over or placed under walking and working surfaces, or be covered by crossovers to prevent injury to employees and damage to the hoses and cords. The proposal contains only minor editorial changes for clarity.

Paragraph (j)—In paragraph (j) OSHA proposes to retain the existing requirements (§ 1915.91(e)) that flammable substances such as paint thinners, solvents, rags and waste be stored in covered fire-resistant containers when not in use.

Paragraph (k)—Proposed paragraph (k) adds a requirement that combustible scrap be removed from the work area as soon as possible to reduce fire hazards. Shipyards have many small fires that are often due to the accumulation of combustible scrap materials. If combustible scrap is allowed to accumulate in areas where hot work such as welding and cutting are performed, sparks generated by that work could ignite the scrap. Fire prevention helps eliminate the hazards created by the presence of combustible materials. OSHA recently published a fire prevention standard (29 CFR Part 1915, subpart P) that contains fire prevention measures that must be taken before and during hot work (69 FR 55668–55708, (9/15/2004)). The proposed requirement would reduce fire hazards further and improve fire protection in shipyards.

Section 1915.82—Lighting

This section proposes minimum requirements for illumination throughout shipyard employment. Many of the proposed provisions are retained from the existing requirements in § 1915.92. However, the proposal reorganizes them for clarity into the following three paragraphs: (a) General Requirements; (b) Temporary Lights; and (c) Handheld Portable Lights.

Paragraph (a) General Requirements—Proposed paragraph (a) sets forth requirements that apply to lighting in all areas of shipyard employment. The proposed general requirements would apply regardless of whether permanent or temporary lights are used. The lighting intensity levels that would be required by table F–1 would not apply to emergency lighting or portable handheld lights.

In paragraph (a)(1) OSHA is proposing to establish minimum illumination requirements for specific areas and work activities in shipyard employment to ensure that employers have lighting that allows employees to safely perform work tasks. For instance, proposed Table F–1 specifies that general landside areas such as corridors and walkways that employees pass through would be required to have an illumination intensity of at least five lumens (foot candles). However, OSHA believes that higher illumination levels (i.e., 10 lumens) are necessary to work safely in landside areas such as machine and carpentry shops. In these areas employees may be using hazardous tools and equipment and performing precision work. Likewise, higher illumination levels (i.e., 10 lumens) are necessary in warehouses since it may be necessary for employees to read warning labels on flammable or hazardous substances and to safely operate lift trucks and other equipment.

According to the IMIS database, there have been four fatalities that may have been prevented had the employees been working in an area that was provided with adequate illumination. In one incident, an employee stepped into an

unguarded opening in the floor of a dark cargo deck and fell almost 20 feet to his death at the bottom of the cargo hold. At the time of the accident, the employee was walking across the dark deck towards an open doorway, which provided the only illumination of the area. In another case, an employee climbing down a ladder in an elevator shaft that was dimly lit, fell 50 feet to his death. It is unclear whether the employee could even see the bottom of the 130-foot shaft as he was descending. In another case, an employee was electrocuted when he was performing electrical repair work at night in a poorly illuminated area. An accident investigation found there was ''inadequate lighting'' at the location where the employee was working (Ex. 14). Although the investigation confirmed that the controlling circuit breaker was closed, another switch was found in an open position, possibly because there was not enough light to read the switch. The existing rule specifies that work areas must be ''adequately illuminated'' (§ 1915.92(a)). The proposed rule clarifies the existing requirement by setting forth specific illumination levels for various shipyard work locations (proposed § 1915.82 Table F–1). Had the employee's work location been lit to the proposed levels, the employee may have been able to see that the oil switch was still open and close it prior to starting his repair work.

SESAC recommended that OSHA add specific illumination requirements to this section (Docket SESAC–1992–1, Ex. 100X, 1992, p. 113), and the Agency agrees that the table provides useful and simple assistance for employers. The illumination specifications in proposed Table F–1 are drawn from illumination tables in the Construction Illumination (§ 1926.56) and Hazardous Waste Operations (§ 1910.120) standards, and in the national consensus standard for industrial lighting (Ex. 3–8, ANSI/IESNA RP–9–01–2001 Recommended Practice for Lighting in Industrial Facilities). The proposal revises and simplifies the tables from those standards to make Table F–1 more applicable to shipyard employment conditions and activities.

OSHA is proposing that each area of the workplace be illuminated according to the following intensities. In general areas, such as exits, accessways, stairs and walkways, the area must be illuminated with at least 3 lumens on vessels and vessel sections and 5 lumens on landside. In areas such as landside tunnels, shafts, vaults, pumping stations and underground work areas, and all assigned work areas on any vessel or vessel section, the area must be illuminated to at least 5 lumens. Landside work areas such as machine shops, electrical equipment rooms, carpenter shops, lofts, tool rooms, warehouses, outdoor work areas, changing rooms, showers, sewered toilet facilities and all eating, drinking and break areas must be illuminated to 10 lumens. First aid stations, infirmaries and offices must be illuminated to 30 lumens.

OSHA notes that the Longshoring standard, 29 CFR 1918.92(a), requires generally that illumination for cargo transfer operations be of a minimum light intensity of five lumens. Where work tasks require more light to be performed safely, supplemental lighting must be provided. That approach does not provide the guidance that SESAC requested while proposed Table F–1 provides for those situations in which supplemental lighting may be necessary. OSHA does not intend to require that employers provide additional lighting where natural light provides the necessary illumination level. However, where natural light does not provide the required level (e.g., at dusk), the employer must provide additional lighting and Table F–1 specifies the appropriate minimum levels of illumination.

OSHA solicits comments on the proposal as well as alternative approaches such as the one used in the Longshoring Standard or the requirements of the ANSI/IESNA standard. Are the proposed lighting intensities adequate? Does the table adequately address all areas of shipyard employment? If not, what areas need to be added?

In paragraph (a)(2), OSHA proposes to retain unchanged the existing requirement (§ 1915.92(e)) that matches and open flame devices may not be used as sources of light. OSHA proposes to place this provision with the general requirements to reinforce its intent that matches and open flames are not to be used for light for any purpose, including emergencies, or anywhere in the shipyard, regardless of whether permanent, temporary or handheld portable lighting is available. Using matches and open flame devices, such as burning torches, for lighting or heat is not safe or practical for a number of reasons. They are unreliable, could be blown out easily, could endanger employees by creating a fire hazard, and do not provide adequate lighting intensities.

SESAC also recommended adding a requirement that only a ''qualified person'' be permitted to replace or cap unguarded, damaged bulbs that have exposed filaments (Docket SESAC 1991, Ex. 100X, p. 84). OSHA has not adopted this suggestion, because the Agency believes that the existing and other proposed standards address this hazard. The existing and proposed provisions requiring temporary lights to be either completely recessed or equipped with guards reduces the electrical hazard created by an exposed light bulb filament, and the electrical safe work practices of § 1910 subpart S that apply to temporary lights powered from landside sources address the hazards to employees repairing the temporary lights.

OSHA requests comment on this recommendation, and whether it is needed, in light of other existing and proposed regulatory provisions that deal with lighting, electrical safety, and guarding of temporary lights.

Paragraph (b) Temporary Lights—Proposed paragraph (b) retains, with minor editorial changes, the existing provisions on temporary lights (§ 1915.92(f)), including light guards, grounding, insulation, and splicing.

Proposed paragraph (b)(1) is similar to the existing requirement (§ 1915.92(b)(1)) that temporary lights that do not have bulbs that are ''deeply'' recessed must have guards to prevent accidental contact. Guarding of non-recessed bulbs is necessary to protect employees from being burned, or cut by broken bulbs, and to prevent combustible materials from igniting. However, paragraph (b)(1) proposes to require that temporary lights be guarded if they are not ''completely'' recessed. The existing provision only requires guarding if lights are not ''deeply'' recessed. Unless a temporary light is completely recessed, there is a risk that the light could be damaged or broken, thus creating a hazard for employees (e.g., electrical, laceration, burn). A guard is necessary to control those hazards. OSHA believes the proposed language provides employers with clearer and more accurate guidance on when the hazards this provision addresses are present and must be controlled. OSHA requests comment on the proposed provision. What is your current practice? Should OSHA require that all temporary lights be guarded?

Paragraph (b)(2) proposes that employers equip temporary lights with electric cords ''with sufficient capacity to carry the electric load.'' The existing standard (§ 1915.92(b)(2)) requires the use of ''heavy duty'' electric cords. The OSHA Construction Electrical standards are similar to the existing standard, requiring that cords for portable tools and appliances be designed for ''hard or extra-hard usage'' (§ 1926.405(a)(2)(j)). The construction standard includes a

note listing various types of hard or extra-hard cords that meet the National Electrical Code (ANSI/NEPA 70, Article 400, Table 400–4).

OSHA believes the proposed language more accurately identifies the type of cord employers must provide to ensure employees are not exposed to electrical hazards, and thus, provides greater protection for employees. The fact that a cord is ''heavy duty'' does not necessarily mean that it has sufficient capacity to carry the electric load. In addition, OSHA believes the proposal provides employers with greater flexibility in meeting the requirements of the standard. The proposal ensures that employers may use whatever type of cord is sufficient to safely carry the electric load.

Proposed paragraph (b)(3) retains unchanged the existing requirements (§ 1915.92(b)(2)) that connections and insulation used on temporary lights be maintained in a safe condition. Implicit in this provision is the requirement that the employer check to see that connections and insulation are in proper working order and replace them when they are broken, cracked or damaged.

In paragraph (b)(4), OSHA proposes to clarify the existing requirement (§ 1915.92(b)(2)) to prohibit temporary light stringers, as well as temporary lights, from being suspended solely by their electric cords, unless they are designed by the manufacturer to be used in that way. When any type of lights and wiring are not suspended properly, placing them under tension the manufacturer did not design the electric cord to take, the cord can fray, break, or become damaged.

Proposed paragraphs (b)(5) and (6) retain, with non-substantive changes, the existing requirements in § 1915.92(f). Proposed paragraph (b)(5) requires that lighting stringers not overload branch circuits. Proposed paragraph (b)(6) requires that branch circuits be equipped with over-current protection whose capacity does not exceed the rated current carrying capacity of the cord used. OSHA believes that both measures are necessary to provide an adequate measure of safety from electrical and fire hazards associated with circuit overloading.

Proposed paragraph (b)(7) revises the existing standard by requiring that splices have insulation that ''exceeds'' that of the cable. The existing provision allows the use of splices where the insulation is ''equal'' to that of the cable. OSHA believes the revisions are necessary to ensure that employees are fully protected from electrical hazards if splices are used. When a splice is necessary on an electrical cord, the current may create a surplus of energy or ''hot spot'' at the splice junction that is greater than the current for which the cord was designed. Requiring that the rated capacity of the insulation exceed the capacity of the cable ensures that employees will be protected if they touch or come into contact with the splice. The additional insulation capacity also ensures that hot spots do not start burning or ignite combustible materials in the area.

OSHA requests comment on the proposed revision. Does the proposed requirement provide sufficient protection for employees? Is weather a factor in determining what insulation to use? In your establishment and industry, what practices are followed regarding insulation of splices? Should OSHA propose a more specific requirement, for example that splices have insulation at 1½ times greater than that of the cable?

Proposed paragraph (b)(8) retains the existing requirement (§ 1915.92(c)) that exposed, non-current-carrying metal parts of temporary lights be grounded. It also retains the requirement that grounding be provided either through a third wire in the cable that contains the circuit conductors or through a separate wire that is grounded at the source of the current. OSHA also proposes to include the existing provision requiring that grounding be done in accordance with the requirements of § 1915.132(b) subpart H, Tools and Related Equipment.

Paragraph (c) Handheld Portable Lights—Proposed paragraph (c) addresses the use of handheld portable lights in work areas that do not have permanent or temporary lighting or such lighting is not working or is not readily accessible.

To ensure that employees do not enter unlighted or dark areas, paragraph (c)(1) requires that the employer provide employees with handheld portable lights and ensure that such lights are used whenever employees enter those areas. The proposal simplifies the current requirements (§ 1915.92(d) and (e)), by combining them into one provision and clarifying that the requirement is applicable to all unlighted areas in shipyards, regardless of whether they are on vessels, vessel sections or landside.

In response to a MACOSH recommendation (Ex. 1–2), proposed paragraph (c)(1) also clarifies in objective terms the existing prohibition that employees not enter ''dark spaces'' without handheld portable lights. The proposal replaces that term with the requirement that employers provide and ensure handheld portable lights are used to enter or work in any area that (1) does not have permanent or temporary lighting, (2) where such lighting is not working, or (3) where such lighting is not readily accessible. ''Readily accessible,'' for purposes of this provision, means that the light switch or other means of activation is located in close proximity to the entrance to the area. For example, where an employee would have to travel across a long work area or climb steps in the dark to turn on permanent lights, those lights are not readily accessible. In such cases, the employee would have to use a handheld portable light to enter the area. OSHA requests comment on the proposed provision. In your establishment, when are employees provided with and required to use handheld portable lights to enter an area? Are there other situations where handheld portable lights are needed?

In three different fatalities reported in the IMIS database, employees who were working in areas where the lighting was not working, fell to their deaths walking in dark areas. In one instance, an employee who was trying to restore power to the temporary lighting stepped off of the coaming and fell approximately 25 feet to the bottom of the hold.

Proposed paragraph (c)(2) is similar to the existing requirement (§ 1915.92(d)) that where temporary lighting from sources outside the vessel or vessel section is the only means of illumination, the employer shall ensure that handheld portable lights are available to provide illumination for safe movement of employees. This provision is needed because temporary lighting could fail, making it difficult and hazardous for employees exiting an area of the vessel. The proposal requires that the employer ensure that the portable lights are handheld so employees are able to take the lights with them to light their way as they move about and exit the space safely. The proposal also makes explicit that the employer must ensure that handheld portable lights are readily available in the immediate area where employees are working. Implicit in the proposal is the obligation that the employer provide handheld portable lights in numbers that are adequate to ensure that all employees are able to move about and exit the area safely. OSHA requests comment on the proposed provision. Should OSHA apply this provision to any area where landside or shore-based lighting provides the only illumination? Should OSHA include an exception to the rule when natural sunlight suffices?

Proposed paragraph (c)(3) retains and simplifies the existing requirement (§ 1915.92(e)) on the use of handheld portable lights in any area that is not gas-free. In such areas, the proposal would require that the employer ensure that only ''explosion-proof, self-contained'' handheld portable lights are used (or other equipment approved by a nationally recognized testing laboratory (NRTL)). Although the existing standard requires the same, stakeholders must go to another section of part 1915 (§ 1915.13(b)(9)) to find out what type of lights they must provide when the area is not gas-free. The proposal adds the language from the cross-referenced section, thus eliminating the need to look to the other section. The proposal also carries forward the note to existing § 1915.13(b)(9) that equipment approved by a NRTL for the class and division of the location to be used will meet the requirements of this paragraph. (OSHA notes that the proposed requirement would apply in non-gas-free areas regardless of whether proposed paragraphs (c)(1) and (c)(2) also apply.)

Section 1915.83 Utilities

The proposed section on utilities retains, with minor clarifications, the existing requirements of § 1915.93 and reorganizes them for clarity into four paragraphs: (a) Steam supply systems; (b) Steam hoses; (c) Electric shore power; and (d) Heat lamps. SESAC recommended retaining these provisions and did not propose any changes (Docket SESAC 1992–3, Ex. 104X, pp. 88–96). The Agency agrees that these provisions are necessary to protect employees from hazards associated with unchecked release of steam and with excessive wearing, tearing, and chafing of steam hoses that could compromise the integrity of components.

Paragraph (a) Steam Supply System—Proposed paragraph (a) requires that the employer ensure that the vessel's steam piping system has a safe working pressure prior to supplying steam from an outside source to the vessel.

In paragraph (a) OSHA proposes to delete the existing requirement that employers must ascertain the steam system working pressure from ''responsible vessel's representatives, having knowledge of the condition of the plant.'' In its place, OSHA proposes to provide employers with greater flexibility in determining the most effective way to meet the requirements of this provision, while keeping employers responsible for ensuring that the steam system is safe before supplying steam from an outside source. Employers are free to ascertain the critical information from a responsible vessel's representative, a contractor or any other person who is qualified by training, knowledge or experience to make that determination.

In paragraphs (a)(1) through (3), OSHA proposes to simplify the existing requirements (§ 1915.93(a)(1)) for outside systems that supply steam to a vessel's steam piping system. Proposed paragraph (a)(1) requires that a pressure gauge and a relief valve be installed at the point where the steam hose of the outside steam source joins a vessel's steam piping system. Proposed paragraph (a)(2) requires that the relief valves of outside steam systems be set to relieve excess steam and be capable of relieving steam at a pressure that does not exceed the safe working pressure of the vessel's steam piping system in its present condition. Proposed paragraph (a)(3) requires that there must not be any means of disconnecting the relief valve from the system that it protects.

In paragraph (a)(4), OSHA proposes to revise the existing requirement (§ 1915.93(a)(1)) on visibility and accessibility of pressure gauges and relief valves of steam supply systems by adding a requirement that such gauges and valves also be ''kept in legible condition.'' OSHA believes this addition will address concerns SESAC members raised that gauges and valves often cannot be read because they are too dirty to be readable or the print is too small (Docket SESAC 1992–2, Ex. 102X, pp. 94–96). OSHA agrees that gauges must be visible, accessible and legible in order to determine accurately whether the working pressure of the steam supply system is safe.

In paragraph (a)(5), OSHA proposes to add a requirement that relief valves be positioned or placed in a location where they will not cause injury if they are activated. For example, orienting or positioning the relief valve to vent away from employees is one way to protect them from being scalded and burned if a valve is tripped by high pressure.

Paragraph (b) Steam Hoses—Proposed paragraph (b) retains, with some revisions, the existing requirements for steam hoses (§ 1915.93(a)(2)–(4)). Proposed paragraph (b)(1) requires that the employer ensure that all steam hoses and fittings have a safety factor of at least five—which is the same safety factor as in the existing standard (§ 1915.93(a)(2)).

In paragraph (b)(2), OSHA proposes to revise the existing requirement (§ 1915.93(a)(3)) on hanging steam hoses in bights. The existing rule requires that the weight of the steam hoses must be ''relieved by appropriate lines'' to prevent chafing. The proposal requires that ''short bights'' be used when hanging steam hoses. OSHA believes the proposed language more clearly and directly specifies the measures necessary to prevent chafing and reduce tension on the hose and its fittings. SESAC recommended this change (Docket SESAC 1992–3, Ex. 104X, p. 123) because they said the use of short bights better protects steam hoses from damage.

Proposed paragraphs (b)(3) and (b)(4) retain and divide into separate provisions the existing requirements to protect steam hoses from damage and to protect employees from injury from steam hoses (§ 1915.93(a)(4)). In paragraph (b)(3), OSHA proposes that steam hoses be protected from damage. Steam hoses can be damaged when equipment and material are moved through walking and working areas. Employees could be seriously injured if a damaged hose suddenly releases steam.

Proposed paragraph (b)(4) revises the existing requirement that steam hoses and temporary piping passing through walking or working areas be shielded to protect employees from injury due to accidental contact. The existing provisions only require shielding of steam hoses and piping that pass through ''normal work areas'' (§ 1915.93(a)(4)). The proposed language expands coverage and provides employees with greater protection because it ensures that hoses and piping passing through areas and spaces where employees walk or pass through to reach work areas are also shielded to protect employees.

Paragraph (c) Electric Shore Power—In paragraph (c) the Agency proposes to retain, with minor revisions, the existing requirements (§ 1915.93(b)) addressing the actions employers must take prior to energizing a vessel's circuits when electricity is supplied from a landside power source. OSHA believes that the proposed performance language improves the clarity of the requirements. For example, the proposal changes the paragraph title to ''Electric Shore Power'' from ''Electric Power'' to emphasize that the provisions address the actions that are necessary to protect employees from the hazards of remote power carried by electric cables or wires onto a vessel, which differ from other electrical hazards such as hand-held powered tools.

Proposed paragraph (c)(1) retains unchanged the existing requirement (§ 1915.93(b)(1)(i)) that, prior to energizing the vessel's circuits, employers ensure the vessel is grounded if it is in dry dock.

In paragraph (c)(2), OSHA proposes to revise the existing requirement (§ 1915.93(b)(1)(ii)) to require that, prior to energization, employers ensure that circuits are in safe condition. The proposal also deletes the existing language requirement that employers ascertain such information from a ''responsible vessel's representative.'' OSHA believes the proposal provides employers with greater flexibility to determine the most effective procedure for checking the safety of circuits.

In paragraph (c)(3), OSHA proposes to retain unchanged the existing requirement (§ 1915.93(b)(1)(iii)) that circuits to be energized must be equipped with overcurrent protection that does not exceed the rated current-carrying capacity of the conductors.

Paragraph (d) Heat Lamps—Proposed paragraph (d) would require that all heat lamps, including the face, be equipped with surround-type guards to prevent contact with the bulb, which could result in employee burns or the igniting of combustible material. The proposal expands the existing requirement (§ 1915.93(c)), which is limited to infrared heat lamps and does not fully address contact hazards since it does not require that the lamp face be guarded. OSHA believes these changes are necessary because shipyards use a variety of heat lamps and because fires are a significant source of accidents onboard vessels. In addition, employees can be seriously burned if they come in contact with a lamp face, which the guarding will prevent.

Section 1915.84 Work in Confined or Isolated Spaces

The proposal retains, with revisions, the existing requirements (§ 1915.94) to protect employees working in confined spaces or alone in isolated locations. The proposal also retains the existing exception in § 1915.51(c)(3) for welding, cutting and heating in confined spaces where, under certain conditions, an employee must be stationed outside the confined space to maintain communication and render aid if necessary. After reviewing the existing rule, SESAC recommended retaining the requirements (Docket SESAC 1992–2, Ex. 102X, p. 99). OSHA agrees with SESAC that these provisions are necessary to reduce employee deaths in shipyard employment.

Since 1987, thirteen fatalities have been reported in the OSHA IMIS database where employees were working alone in isolated areas in shipyards and were not discovered until after they had died from their injuries (Ex. 13). Following are some of those incidents.

- In 2002, an employee was working alone in the plenum on the starboard side of the A/B deck on a Navy vessel. Management stated that no one had checked on him often enough to notice he was missing until someone noticed his body floating in the water nearby.
- In 2000, an employee was working on the accommodation ladder on the MV Cape Henry when he apparently fell and drowned. He was not found for 11 days.
- In 2000, a crew was working on a cargo transfer crane barge welding metal grommets under the crane tracks on the deck of the barge. One employee climbed into a hold and was overcome by lack of oxygen. The employee was eventually found and later died.
- In 1998, a five-man crew was working on a barge, refitting it for use on the Panama Canal. One of the employees was working alone on the port side of the vessel installing the pilot house when he fell into the water. The remainder of the crew did not know that the employee had been missing until they found him dead in the water at a later time.
- In 1995, an employee was working alone as a shipyard dock watchman when he apparently fell from the gangway between the ship and the dock wall to the bottom of the dry dock. The unconscious employee was not found until the relief watchman came on duty and summoned help. The emergency team who arrived found the employee suffering from head and limb fractures and internal injuries. The employee later died of those injuries.
- In 1993, an employee was killed working alone while welding an overhead lap of steel plate to the underside of a vessel in dry dock. While standing on a concrete dry dock apron, approximately 14 feet wide by 49 feet long, the employee apparently walked off the end of it into the water and drowned. A coworker had gone home to take care of personal business, and there was no one there to rescue the employee.
- In 1992, two employees were cutting bulkheads using a torch in a small compartment on a drilling rig. The hose failed just inside the manways and ignited, trapping both employees inside the compartment until the end of the shift, about one hour. There were no scheduled checks on these employees, and one employee died as a result.

Paragraph (a)—Proposed paragraph (a) retains the requirement that the employer make frequent checks during each workshift to ensure the safety of any employee working in a confined space or alone in an isolated location. There are many ways employers can comply with this requirement. One method is using two-way radios. Another is frequent visits by the employer or employer's designee to the confined space or the isolated area. If visits to the work area are used, it is essential that the employer have a visual check of the employee rather than relying on power tool noise. Some power tools can continue to run even after an employee is injured or disabled.

Paragraph (b)—In paragraph (b) OSHA proposes to add a new requirement that the employer, at the end of each shift, account for each employee who is working in a confined space or alone in an isolated location. This provision would ensure that employers ascertain that each employee has returned safely from working in those areas, and if not, to take immediate action to locate the missing employee to render first aid or any other needed assistance. OSHA added this provision after reviewing shipyard fatality reports that indicated some injured employees were not discovered until long after their shifts had ended. OSHA recognizes that this provision may not prevent every fatality associated with confined spaces and isolated work areas, but the Agency believes it will help to increase survivability when an accident or injury occurs.

OSHA requests comment on the proposed provision. Specifically, OSHA requests comment on whether the section should be limited to employees working alone in either a confined or isolated space. Should OSHA address the hazards associated with working in confined spaces in subpart B confined and enclosed spaces instead of subpart F? In your establishment and industry, are employees working in confined spaces or alone in isolated spaces checked frequently during the workshift and accounted for at the end of the workshift? OSHA requests data and information on any injuries, fatalities, or near-misses that have occurred during the last five years due to an employee working in a confined space or alone in an isolated area. If any incidents have occurred, what measures have been instituted to ensure that employees working in these areas are safe?

OSHA also requests comment on whether the section should require that employers establish a system or some form of a signal to indicate when a single employee enters a confined space or a cofferdam to perform work. For example, should OSHA require employers to have a system where employees leave their picture identification (or some other easily identifiable flag) outside the entrance to

alert other employees that someone is inside working?

Section 1915.85 Vessel Radar and Radio Transmitters

The proposed section retains, with minor revisions, the existing requirements in § 1915.95 to protect employees from hazards (e.g., hazardous energy, radiation) associated with radar and radio transmitters onboard vessels. Although the scope of the proposed section is expanded to apply to shipbreaking, OSHA notes that it is very unlikely that radar and other radiation emitting equipment are still operational when shipbreaking operations are performed. Therefore, if the hazards this section seeks to address are not present, the requirements would not apply.

Paragraph (a)—Proposed paragraph (a) revises the existing requirement (§ 1915.95(a)) to ensure that no employee, whether radio repair technician or other employee, is allowed to work on the radar, radio transmitter, mast, king post, or other area closely located, unless the radar and radio transmitter are secured and made incapable of releasing hazardous energy or emitting radiation. Although the existing provision prohibits work in areas near the radar or radio transmitter unless the equipment is made incapable of emitting radiation, the provision does not address all the hazards of radio and radar transmitters including the energization of equipment. For example, an employee working aloft on a mast could be injured or even killed if a rotating radio antenna moves and strikes the employee.

Paragraph (b)—Proposed paragraph (b) revises the existing provision to require that prior to servicing, repairing or testing any radar or radio transmitter, the employer must ensure that hazardous energy is controlled in accordance with the proposed requirements of § 1915.89 Control of Hazardous Energy. The existing provision only requires that the equipment be ''appropriately tagged'' (§ 1915.95(a)). However, OSHA believes that more detailed lockout/tagout procedures are needed to ensure that employees are fully protected from the movement or start up of equipment and the release of hazardous energy. Tagging the equipment without complying with the rest of the proposed lockout/tagout program and procedures does not ensure that employees will be fully protected, especially those working in multi-employer worksites or in situations where ship's crew are present.

The additional protections in proposed paragraphs (a) and (b) are necessary for two reasons. First, any employee, including a repair technician, could be injured or killed if the radar or radio transmitter releases energy or if radiation is emitted from the radar system while the employee is working on or near that equipment. The proposed revision provides uniform protection for all employees working on or near such equipment. Second, this revision would ensure that employees servicing radar systems and radio transmitters follow the procedures for controlling hazardous energy sources (lockout/tagout) in proposed § 1915.89 to protect themselves and other employees working in the area. The Agency believes that shipyards generally follow these precautions currently, and thus this provision would not alter work practices in this area.

Paragraph (c)—Proposed paragraph (c) retains unchanged the existing provision (§ 1915.95(b)) requiring that the employer schedule testing of radar or radio at a time when (1) no work is in progress aloft, or (2) personnel can be cleared a ''minimum safe distance'' from the danger area. The proposal also retains the requirement that the employer follow the minimum safe distance established for the type, model, and power of the equipment. SESAC recommended retaining the existing provisions (Docket SESAC 1992–1, Ex. 100X, pp. 118–130; Docket SESAC 1992–2, Ex. 102X, pp. 97–99).

SESAC also recommended that OSHA include sonar testing and repair in this section (Docket SESAC 1992–1, Ex. 100X, pp. 118–130). OSHA requests comments on whether the testing and repair of sonar should be included. What are the potential hazards to employees in testing and repairing sonar? In your establishment and industry, have employees been injured, killed, or exposed to radiation while testing, repairing or working near sonar equipment? What precautions are taken to ensure that employees are protected from these hazards?

Section 1915.86 Lifeboats

The proposed section retains and revises the existing requirements (§ 1915.96) for working in or on lifeboats. Several lifeboat fatalities have occurred in the shipbuilding and repair industry. In 1993, for example, two employees being hoisted in a lifeboat were thrown into a river and drowned because the boat was not adequately secured. When the boat was released the hoist lines were not sufficient to bear the weight and shock of the falling lifeboat. In 2004, three employees being lifted onto a newly-constructed floating oil rig were dropped when the rig's sternhook failed, killing one employee and seriously injuring the two others. The proposal prohibits hoisting employees in lifeboats under any circumstances. Such a requirement would have prevented these accidents.

Paragraph (a)—Proposed paragraph (a) simplifies the existing provision (§ 1915.96(a)) to emphasize that the employer must ensure that before employees work in or on a lifeboat, either in a stowed or suspended position, that the lifeboat is secured independently of the releasing gear. Securing the lifeboat prevents it from falling if the releasing gear is accidentally tripped or the davits move. It also prevents lifeboats that are stowed on chocks from capsizing.

Paragraph (b)—Proposed paragraph (b) expands the protection afforded by the existing provision (§ 1915.96(b)) by prohibiting employees from being in a lifeboat at any time while it is being hoisted. The existing requirement only prohibits employees from being in lifeboats when they are hoisted ''into the final stowed position.'' As the discussion of fatal shipyard accidents shows, the hazards associated with the hoisting of lifeboats (e.g., falling) are present any time they are hoisted. The proposed provision will provide employees with protection whenever the hazard is present. OSHA requests comments on the proposed revision.

Paragraph (c)—Proposed paragraph (c) retains the existing requirement (§ 1915.96(c)) that the employer not permit employees to work on the outboard side of any lifeboat that is stowed on its chocks unless the lifeboat is secured to prevent it from swinging outboard. If the lifeboat is not secured prior to employees working on the outboard side of it, the lifeboat could swing out and strike the employee, causing him or her to fall.

Section 1915.87 Medical Services and First Aid

Proposed § 1915.87 sets out requirements for medical services, first aid, and lifesaving equipment. Shipyard employment has high accident rates. The provisions in this section are intended to prevent workplace accidents from resulting in fatality and serious injury by increasing the survivability of life-threatening injuries and mitigating the severity of injuries.

The proposal combines and revises, where necessary, the existing standards on medical services and first aid that are applicable to shipyards (§§ 1910.151 and 1915.98). OSHA adopted both standards, pursuant to section 6(a) of the OSH Act, from the established Federal occupational safety and health

standards in effect at the time. (The provisions in § 1910.151 apply to shipyards to the extent that the section addresses hazards and working conditions that § 1915.98 does not. See Ex.16–9, OSHA's Tool Bag Directive.)

Paragraph (a) General Requirement—In paragraph (a), OSHA proposes a general requirement that employers ensure that medical services and first aid for employees are ''readily accessible.'' For purposes of this section, readily accessible means that medical services and first aid are capable of being reached quickly when employees need them, or medical service and first aid can be brought quickly to the employee, and there are no obstacles to gaining quick access.

The purpose of this provision is twofold. First, it would establish uniform criteria applicable to all of the first aid and medical services specified in the section, ensuring that these services are available and close enough to the injured employee so effective intervention can be provided. Second, in the case of serious or life-threatening injury, it would require employers to have steps in place to ensure that additional emergency medical intervention is readily accessible. The provision also addresses SESAC's concerns that first aid providers be able to reach injured employees quickly enough to render effective assistance.

Uniform criteria for all first aid and medical services are necessary because their components, primarily first aid providers and first aid supplies, are interrelated. They both must be readily accessible for intervention to be effective. It is not effective to require that first aid kits be situated at every work location without a parallel requirement to have trained employees at the work location who are capable of using those supplies. Conversely, on-site trained first aid providers cannot provide effective assistance if first aid supplies are too far away to be accessed quickly. Thus, establishing uniform criteria will help to ensure that the needed components of first aid and medical services are in place to provide effective intervention when needed. Uniform provisions will also help to simplify the section and make it easier to understand and comply with. Finally, the uniform criterion addresses inconsistency concerns that SESAC suggested exist in the current requirements. SESAC pointed out that the existing standard establishes different criteria for different types of first aid and medical services (Docket SESAC 1993–1, Ex. 100X, pp. 167–173). For example, SESAC pointed out that in existing § 1915.98(a) first aid rooms, qualified attendants and trained first aid providers must be ''close at hand'' to any area of the shipyard while the first aid kits provision only requires that kits be furnished for and kept close to each vessel.

OSHA notes that employers will need to consider various workplace factors in determining whether first aid and medical services are readily accessible, such as the size and position of each work location; the number of employees working at the work location; the nature of the hazards to which employees may be exposed; and the distance between work locations and clinics (on-site or off-site), hospitals and rescue squads.

Applying these factors, accidents resulting in severe bleeding or electrical shock resulting in heart or breath stoppage must be treated within a very short time (optimally within three to four minutes) to increase the chances of a positive outcome. To the extent that these types of accident risks are present in shipyards, such as servicing electrical systems where there is a risk of energization or start up, the employer must ensure that necessary first aid is close enough to maximize the injured employee's survivability. For example, where employees are at risk of electrical shock, it is necessary to have first aid providers located in that work area so cardiopulmonary resuscitation (CPR) can be started quickly.

With regard to the second purpose, the proposed provision would require employers to ensure ready accessibility to additional medical services such as rescue squads and ambulances. OSHA notes that some shipyards, primarily larger ones, already have taken these steps by establishing their own on-site medical clinics and ambulance or rescue squads. The proposed provision does not require shipyard employers to have on-site clinics, ambulance or rescue squads, but at a minimum, it requires employers to implement a system to ensure that emergency services such as local rescue squads or ambulance services are readily accessible when needed. The employer's plan needs to factor in reasonably foreseeable delays, such as railroad tracks near the shipyard entrance that could be blocked when rescue squads need to access injured employees in the shipyard.

OSHA requests comment on this provision. In your establishment and industry, what measures are in place to ensure that first aid and medical services are readily accessible? Should the final standard specify a maximum time within which first aid and medical services must be available? For example, should the final standard specify that employers must ensure that first aid and medical services are initiated within three to five minutes of the discovery or report of an injury?

Paragraph (b) Advice and Consultation—In paragraph (b), OSHA proposes to retain, with technical changes, the existing requirement in § 1910.151(a) that employers ensure that health care professionals are readily available for advice and consultation on matters of workplace health.

OSHA is proposing to replace two terms in the existing requirement. The term ''plant health'' would be changed to ''workplace health,'' to make the provision more appropriate to shipyards, and ''health care professionals'' would replace the term ''medical personnel.'' OSHA proposes to define health care professional to mean a physician or any other health care provider whose legally permitted scope of practice allows the provider to independently provide or be delegated the responsibility to provide some or all of the advice or consultation this section requires. The proposal would allow employers to consult with any health care professional (e.g., physician, osteopath, physician's assistant, nurse, EMT, etc.) whose license, registration or certificate authorizes them to provide such assistance and advice. In some instances, a nurse or physician's assistant at an on-site clinic may be able to provide the requested advice and consultation. Employers are also free to use local medical clinics or specialists. The key is that the health care professional must be readily available to provide advice and consultation when needed.

Paragraph (c) First Aid Providers—Proposed paragraph (c)(1) revises the existing provisions (§ 1915.98(a)) on the required number and location of first aid providers and updates the requirements on their qualifications to more fully address the needs and conditions present in shipyards. OSHA proposes that employers ensure there are adequate numbers of employees to render first aid at each work location during each workshift. Section 1915.98(a) currently requires that where a first aid room with a qualified attendant is not ''close at hand,'' there must be at least one employee ''close at hand'' to administer first aid. SESAC raised two concerns about this provision. They said the language ''close at hand'' was too vague. In addition, they expressed concern that first aid providers would not be able to reach injured employees quickly enough if they were not located at shipyard work locations. For example, some SESAC members said local emergency services

can be delayed in reaching shipyards due to traffic situations, such as being stopped at train crossings. To resolve these concerns, SESAC recommended that there be first aid providers at shipyard work locations regardless of whether first aid rooms or hospitals are located nearby (Docket SESAC 1993–1, Ex. 100X, pp. 166–173).

Based on SESAC's recommendation, OSHA proposes in paragraph (c)(1) that employers ensure that there are employees qualified to provide first aid at each work location during each workshift. OSHA agrees with SESAC that the proposed provision is necessary and will be effective in ensuring that first aid is provided quickly enough to maximize survivability and prevent permanent injury. The sooner life-threatening conditions are treated, the more likely that the outcome will be positive. The American Heart Association (AHA) found that when resuscitation and automatic external defibrillation are delivered within three to five minutes, reported survival rates from sudden cardiac arrest are as high as 48 to 74 percent (Ex. 8). Studies have shown that for each minute sudden cardiac arrest is not treated, the probability of reviving the heart decreases by 7 to 10 percent (Exs. 7, 8). These data indicate that having responders at the work location could significantly increase the survival rates for injured employees.

Having first aid providers at the work location can also ''buy time'' until off-site rescuers arrive. For example, performing CPR immediately can help to preserve heart and brain function until local emergency services are able to provide complete medical treatment, such as providing oxygen or using an automated external defibrillator (AED) to restore normal heart rhythm. According to IMIS, there were 13 fatalities in shipyards that were deemed ''heart attack'' or ''coronary'' within a 15 year period. Out of those 13, only 4 reports documented any basic life support, such as CPR or first aid, prior to rescue squads arriving on the scene. Even for injuries that are not immediately life threatening, timely first aid can reduce further injury and significantly aid recovery by, for example, immobilizing fractures, reducing blood loss or providing warmth for shock.

For example, the proposed provisions requiring trained employees at each work location to render first aid, including cardiopulmonary resuscitation (CPR), may have prevented the following shipyard fatalities. In one case, a shipyard employee was electrocuted while troubleshooting a portable outlet box. The IMIS abstract indicates that coworkers summoned emergency medical personnel to the worksite, which appears to suggest that there was no one at the worksite trained to provide CPR to ''buy time'' until offsite emergency personnel arrived. There also is no indication how long it took for emergency personnel to arrive. When the personnel did arrive, they transported the injured employee to a hospital, but he died. Had the proposed provisions been in place, there would have been first aid providers at that work location to begin CPR immediately to preserve the employee's brain and heart function during those critical first minutes while offsite emergency personnel are summoned (proposed § 1915.88(c)(1)). Studies show that for each minute sudden cardiac care is not treated, the probability of reviving the heart decreases by as much as 10 percent (Ex. 7).

In another case, an employee began experiencing chest pain after climbing down a scaffolding stair tower for his lunch break. When he asked coworkers for help, they began walking him along the pier, presumably to an on-site infirmary. The employee collapsed while he was walking and died of a heart attack. Under the proposed provisions, there would have been trained employees who would have known to have the employee lie down rather walk to an infirmary. Moreover, these employees would have been able to start CPR, which would have maximized the employee's survivability potential. Similarly, a shipyard employee who collapsed while he was working in the engine room of a large ship may have survived had other employees working in the engine room or on the vessel been trained to render first aid. There is no indication in the IMIS abstract whether there were any trained first aid providers in the engine room or on the vessel to perform CPR.

The proposed requirement to ensure that during each workshift there are an adequate number of first aid providers (proposed § 1915.88(c)(1)) also may have prevented shipyard fatalities reported in the IMIS database. For example, during a ''graveyard'' shift, a shipyard employee working in the bottom of a vessel cofferdam died after he suffered cardiac arrest. There is no indication in the abstract whether any first aid providers attempted resuscitation or indeed whether there were any first aid providers at the shipyard during that workshift.

For purposes of this provision, the meaning of a shipyard ''work location'' will depend on the size, nature and location of the shipyard. OSHA does not intend the term to mean a single work area. A shipyard may have hundreds of work areas and only one or a few employees may work in any one area. Rather, OSHA intends a shipyard work location to refer to a group of work areas that are clustered together and in near proximity to each other. For instance, work areas in a small, concentrated shipyard may constitute a single work location, even though some may be located on a vessel and others on landside. By contrast, a large shipyard that has multiple piers, docks, large vessels, and landside facilities is likely to be considered to have multiple work locations. This is because shipyard work areas are more likely to be spread across a large area, possibly miles apart, and some may be remotely located. In these shipyards, it is unlikely that a first aid provider located in one work area would be able to reach all work areas within the shipyard quickly enough to provide effective intervention. Accordingly, OSHA believes that each group of clustered work areas must have an adequate number of first aid providers to ensure that timely intervention is provided for employees working at a work area within that group. By contrast, a single work area distantly located from other work areas may, of necessity, be considered a work location because first aid providers in other work areas would not be able to reach the area quickly enough to effectively aid an injured employee.

Additionally, OSHA is proposing to add a requirement that employers ensure the work location has first aid providers during each workshift. Many shipyards have multiple workshifts and employers must ensure that employees working in any of these workshifts will have effective first aid intervention if an injury occurs. Having first aid providers at each work location is especially important during those hours when on-site and off-site infirmaries and clinics are not open.

Proposed paragraph (c)(1) also includes the following objective factors employers must consider in determining how many providers are needed at each work location:

- The sizes and location of work locations in the shipyard;
- The number of employees at each work location;
- The nature of the hazards present at each work location; and
- The distance of each shipyard work location from clinics (on-site or off-site), rescue squads and hospitals.

OSHA believes that the addition of the objective factors not only will make the requirement easier for employers to understand and comply with, but also

will address SESAC's concern about the vagueness of the current language (Docket SESAC 1993–1, Ex. 100X, pp. 167–173). (A more detailed explanation of the objective factors is included below in the discussion of first aid supplies).

OSHA believes the proposed revision should not pose significant new burdens for shipyard employers since many already have multiple employees at each work location who are qualified to provide first aid. For instance, one SESAC member said that a significant number of employees in Boston area shipyards already receive first aid training:

> [T]he employer would pick employees to go to the first aid training center, and after the training was over, he'd go back to the shop and other people would go, and it was a continual thing, and they'd be certified (SESAC 1992–2, Ex. 102X, p. 161).

OSHA requests comment on the proposed provision. In your establishment and industry, how many employees are trained to provide first aid? Are there trained providers at each work location and during all workshifts? Are the objective factors in the proposed standard appropriate for determining how many first aid providers employers should have at each work location? What additional factors, if any, should employers consider?

OSHA has recently developed and published a Best Practices Guide: Fundamentals of a Workplace First-Aid Program (Ex. 18). This document provides a discussion on the basics of assessing the risks and designing a first aid program that is specific to the worksite. Although this document addresses some basics, while developing a first aid program, employers need to keep in mind the additional factors specified in the proposal.

First aid provider training/qualifications. The importance of first aid training is immeasurable. Although some shipyard employees may have received training in the past, appropriate and up-to-date training is necessary to ensure that injured employees receive correct intervention. Lack of training can also result in a lack of treatment when it is needed. For example, in 2002, as an employee was standing on a scaffold to bolt a motor onto a crane located off of the main house. After descending from the scaffolding for his lunch break, the employee complained of chest pains and asked coworkers for help. They proceeded to walk the employee along the pier. The employee collapsed while he was walking and died of a heart attack. Had the coworkers been trained in first aid and CPR, they would have known the correct steps to follow when an employee experiences the early signs and symptoms of a cardiac event.

Section 1915.98(a) currently requires that any person administering first aid be ''qualified,'' but does not define the term. In paragraph (c)(2), OSHA proposes to make this intent clearer by stating that employees designated to provide first aid must have a ''valid first aid certificate.'' The proposed language is drawn from a similar requirement in the Longshoring standard, which OSHA updated in 1997 (§ 1918.97(b)).

The proposal is designed to give employers maximum flexibility in developing a first aid training program that is appropriate for the types of working conditions and hazards in their workplaces. With one exception, CPR training, the proposal does not establish the specific content of the required first aid training program that employers must follow. As long as the certificate is issued by a responsible organization, such as the American Red Cross, the American Heart Association, or other equivalent organization, which requires successful course completion as evidence of qualification, the requirements of the proposal would be met. Likewise, the proposal does not specify a frequency for first aid refresher training. Whatever frequency the certifying organization requires for retaining certification, usually three years, would be allowed.

OSHA is considering including an appendix on the requirements of a first aid training program to ensure that employees are fully trained by qualified instructors. This appendix could be similar to that found in the Logging Operations standard (§ 1910.266), which includes a mandatory appendix that specifies the minimally acceptable first aid training program that employers must follow. Some of the required topics include respiratory arrest, cardiac arrest, lacerations/abrasions, shock, burns and loss of consciousness. Similarly, the Longshoring first aid standard (§ 1918.97) includes a non-mandatory appendix that lists the basic elements of a first aid training program. Along with topic areas such as shock, bleeding, poisoning and burns, this appendix also specifies the manner in which employees must receive training. For example, it recommends that trainees develop hands-on skills through the use of manikins, a course workbook, and adequate time for emphasis on situations likely to be encountered in the particular workplace.

OSHA requests comment on the proposed first aid training requirement. Should the final standard require that first aid providers have a valid first aid and CPR certificate? Should the final rule specify the areas in which first aid providers must be trained? Should OSHA include an appendix similar to that in § 1910.266 or 1918.97 in the final rule? If not, why not? If so, what should the program include? Should the program include hands-on exercises? Should the final rule include a requirement that whatever first aid training program and trainer/provider the employer uses, that the program and/or trainer be certified by a nationally recognized first aid organization? Please explain.

In your establishment and/or industry, what training and certification do first aid providers have and does it include CPR training? What organizations, if any, conduct the first aid training and certification? How frequently do first aid providers have refresher training?

Paragraph (d)—First Aid Supplies—In paragraph (d), OSHA proposes to revise the existing requirement on first aid supplies (§ 1915.98(b)). The proposed changes give employers more flexibility and assistance in tailoring the type, amount and location of supplies to the specific needs of their workplace. The proposal includes objective criteria, which are the same as those proposed for first aid providers, to assist employers in meeting the requirement. A non-mandatory appendix to this section references the most recent consensus standards regarding first aid supplies, consistent with the recently revised general industry standard (§ 1910.151).

Location of first aid supplies. In paragraph (d)(1), OSHA proposes to revise the existing standard to require that first aid supplies be provided ''at each work location.'' (In proposed paragraph (d)(2), OSHA identifies objective criteria to assist employers in determining where to locate supplies in each work location so they will be readily accessible when needed). The existing standard requires that, under certain circumstances, first aid kits be furnished ''for each vessel on which work is being performed'' and be kept ''close to the vessel'' (§ 1915.98(a)). The general industry standard, which was revised in 1998, specifies that first aid supplies must be ''readily available'' (§ 1910.151(b); 63 FR 33450 (6/19/1998)).

The proposed revision gives employers more flexibility and guidance about where supplies need to be located. In addition, the proposal

clarifies OSHA's intent that first aid supplies need to be located at all work locations throughout the shipyard, those onboard and near vessels as well as those at landside work locations.

OSHA requests comment on this provision. In your industry and establishment, where are first aid kits located and what factors do you consider in determining where to locate them?

Number of first aid supplies. The existing standard (§ 1915.98(b)) requires that employers provide ''sufficient'' quantities of first aid supplies, but does not define the term. In paragraph (d)(1), OSHA proposes to revise the existing rule to require that employers provide ''adequate'' first aid supplies at each work location, and adds, in proposed paragraph (d)(2), objective criteria employers must follow in determining whether they have provided enough supplies to meet the needs of that work location. Of particular importance in determining the number of supplies is the number of employees who will be working at the specific location. OSHA requests comment on this provision. In your industry and establishment, how many first aid kits are provided and what factors do you consider in determining how many are needed?

Proposed paragraph (d)(1) also requires that employers maintain their first aid supplies so they remain adequate. This means that employers must ensure that not only are the number of first aid supplies adequate, but also that exhausted supplies are replaced. For purposes of this provision, maintain also means that first aid supplies must be kept in serviceable condition. A more detailed explanation of the proposed maintenance requirement is included below along with the discussion of the inspection of first aid supplies.

Contents of first aid kits. In paragraph (d)(2), OSHA proposes to revise the existing requirements on the contents of first aid kits (§ 1915.98(b)). The existing provision specifies a list of items that first aid kits must contain, a list that SESAC said was outdated (Docket 1992–1, Ex. 100X, pp. 161, 162). Based on SESAC's recommendation, in paragraph (d)(2), OSHA proposes to replace the list with a performance based approach.

The list of supplies in § 1915.98(b) was adopted more than 30 years ago, prior to adoption of the 1978 ANSI Z308.1 standard on workplace first aid kits and is inconsistent with the current ANSI standard (Ex. 3–2, ANSI Z308.1 (1998) Minimum Requirements for Workplace First Aid Kits). The list in § 1915.98(b) does not include all of the minimum content requirements for basic first aid kits specified in the current ANSI standard and includes items that ANSI no longer recommends for general workplace kits (i.e., tourniquets and forceps) (Ex. 3–2, Table 5–1).

OSHA believes that adopting a performance-based approach on the contents of first aid kits will give employers maximum flexibility in tailoring their first aid supplies to the conditions and hazards present in their workplace. Adding objective criteria that employers must consider in determining the content of first aid kits provides a framework for assuring that first aid supplies will be appropriate and adequate for the shipyard work location.

Objective criteria. In paragraph (d)(2), OSHA proposes to add objective criteria to assist employers in determining whether the location, content and amount of first aid supplies are adequate and appropriate for shipyard work locations. The proposal includes the following four criteria that employers must consider:

- *The size and location of each shipyard work location.* The size of the shipyard work location is an important consideration. It is likely that large work locations are spread out and, as such, more first aid kits may be necessary to ensure they are readily accessible if an employee gets injured. Employers also need to consider the location of where employees are working throughout shipyards when determining the number, content and positioning of first aid kits. For example, remote work locations or other shipyard work locations that are farther away from rescue squads or hospitals may need to have more first aid supplies or a broader range of supplies to care for an injured employee until additional help arrives or the employee can be transported for more advanced care. Work locations that may be cut off by passing railcars also may need more first aid supplies in case access roads are blocked when an injury occurs. In addition, it would be necessary for vessels that are underway to have adequate first aid supplies onboard.
- *The number of employees at each work location.* In general, when there are more employees at a work location the employer would need to provide more first aid supplies to prepare for the possibility that an accident could result in multiple employee injuries, or that several accidents could occur within a short period of time.
- *The nature of hazards present at each work location.* Employers need to assess the specific needs and the nature of the hazards present in each work location to ensure that first aid kits contain the types and quantity of supplies needed to effectively treat the injuries and illnesses that could be expected. For example, in shops where hot work is performed first aid supplies for burns would be necessary, and in outdoor areas first aid items for insect or animal bites may be needed.
- *The distance of each work location from hospitals, clinics, and rescue squads.* The distance—and therefore the time needed—to get to hospitals or clinics (on-site or off-site), and for rescue squads to respond is also an important factor in determining the location, amount and type of first aid supplies employers need to provide. A single first aid kit may be adequate for small work locations that are close to on-site infirmaries or local emergency services. However, additional kits and types of supplies may be necessary when medical services are farther away.

OSHA requests comment on the proposed provisions, including the objective factors employers would need to consider in determining the location, amount and types of first aid supplies to provide. What additional factors, if any, should employers consider? In your establishment and industry, what factors do you use in making determinations about first aid supplies?

Non-mandatory appendix. Section 1910.151 includes a recently revised non-mandatory appendix to provide information on the contents of first aid kits (70 FR 1112, 1141 (1/5/2005)). OSHA proposes to incorporate the § 1910.151 appendix, with revisions that update the appendix. The proposed appendix provides guidance to employers on the contents of first aid kits, assessing workplace risks, and OSHA's requirements for protecting first aid providers from possible exposure to bloodborne pathogens. In the proposal, OSHA is updating the reference to the ANSI Z308.1 standard on minimum requirements for workplace first aid kits. The proposed appendix references the 2003 ANSI standard (Ex. 3–16). The appendix to § 1915.87, which OSHA added in 1998 (70 FR 1141 (6/18/1998)), references the 1998 ANSI standard (Ex. 3–2). OSHA requests comment on whether the non-mandatory appendix should include other information on first aid supplies. If so, what should it include?

Maintenance and inspection of first aid supplies. In paragraphs (d)(1) and (3), OSHA proposes to revise the existing requirements on the maintenance and inspection of first aid supplies (§ 1915.98(b) and (c)). OSHA proposes to replace the existing maintenance and inspection provisions

with more flexible performance language.

With regard to maintenance of first aid supplies, the existing standard requires that first aid kits have a weatherproof container and that supplies are in individually sealed packages. Read together, proposed paragraphs (d)(1) and (d)(3) require that first aid supplies be maintained in ''dry, sterile and serviceable condition.'' For purposes of this provision, OSHA would define serviceable condition to mean the state or ability of a device to operate as it was intended by the manufacturer to operate (proposed § 1915.95).

OSHA believes the proposed language provides employers with greater flexibility in tailoring the maintenance and packaging of first aid supplies to the specific conditions present in their work locations while at the same time ensuring that supplies remain useable. For example, first aid kits for use in outdoor and mobile work locations may need weatherproof containers to keep supplies dry, sterile and serviceable, but the same may not be necessary for first aid kits used in enclosed facilities. OSHA notes that individually packaged first aid supplies stored in weatherproof containers would typically be considered in compliance with the proposed requirements as would supplies maintained in accordance with the current ANSI Z308.1 standard (Ex. 3–2).

As mentioned, OSHA proposes to require that first aid supplies be kept in ''serviceable condition.'' The purpose of the provision is to ensure that the first aid supplies remain effective. To ensure first aid supplies remain serviceable, employers would need to store them in accordance with manufacturer instructions (e.g., out of direct sunlight, not above a certain temperature) and replace supplies when their use date expires. Supplies that are maintained and operated in accordance with manufacturer instructions and recommendations would generally be considered in compliance with the serviceable condition requirement. Inherent in the proposed requirement to ensure that first aid supplies are in proper condition is the employer's obligation to replace supplies that are found to be deficient.

In regard to inspection of first aid supplies, the existing standard requires that first aid supplies be checked before being sent out on a job and at least weekly thereafter to ensure that expended items are replaced (§ 1915.98(c)). In paragraph (d)(3), OSHA proposes to replace that language with performance language that would require employers to inspect first aid supplies at intervals that ensure they remain in ''dry, sterile and serviceable condition.'' The proposal gives employers greater flexibility to determine what inspection procedures would be most effective for ensuring that supplies remain in appropriate condition and adequately replenished. For example, it would allow employers to opt for stocking work locations with a larger supply of first aid supplies and establish something other than a weekly maintenance and inspection schedule. It also would allow employers to use smaller, portable first aid kits, such as for mobile work crews, which may need to be inspected and restocked more frequently.

OSHA requests comment on the proposed maintenance and inspection requirements. In your establishment and industry, what maintenance and inspection procedures are followed to ensure that first aid supplies are in adequate supply and serviceable condition?

Paragraph (e)—Quick Drenching/Flushing Facilities—Section 1910.151(c) currently requires that quick drenching or flushing facilities (''quick drench facilities'') be provided within the work area for immediate emergency use where the eyes or body may be exposed to ''injurious corrosive materials.'' OSHA proposes in paragraph (e) to retain and expand the existing provision to require that quick drench facilities be provided where employees could be splashed with hazardous or toxic substances. Shipyard employees involved in operations such as cleaning, painting, and stripping operations are at risk of being splashed with solvents or other chemicals. Although these substances may not necessarily be corrosives, they can injure or burn the skin or eyes or be absorbed rapidly through the skin causing harmful effects.

The expanded coverage of the proposed provision is consistent with the scope of the current ANSI Z358.1 standard (Ex. 3–4, ANSI Z358.1 (1998)), American National Standard for Emergency Eyewash and Shower Equipment). The ANSI standard establishes minimum requirements for emergency eyewashes and showers for persons who have been exposed to ''injurious'' or ''hazardous materials,'' which the standard defines as ''any substance or compound that has the capability of producing adverse effects on the health and safety of humans.''

Location of quick drench facilities. In paragraph (e), OSHA proposes to retain the existing requirement (§ 1910.151(c)) that a quick drenching facility be located within each work area for immediate emergency use. For purposes of this paragraph, OSHA does not intend ''work area'' to mean the entire work location or workplace. Rather, work area means the immediate area where employees are working and potentially exposed to hazardous or toxic materials. Having quick drench facilities as close as possible to the hazard is necessary to ensure that hazardous substances can be removed quick enough to prevent injury or absorption and that facilities are directly accessible in those situations where the employee may be blinded by a hazardous substance. For example, where employees working in a paint shop are routinely exposed to solvents and other chemicals during mixing or cleaning operations, a quick drench facility needs to be located within the shop so employees do not have to go to another area in the shipyard to reach a quick drench facility.

In those work areas where it is impracticable to place permanent (i.e., plumbed) quick drench facilities, such as confined spaces, the employer would need to provide portable facilities. OSHA does not believe this should pose a problem for employers since many already have these portable facilities. The ANSI Z358.1 standard includes specifications for self-contained eyewash equipment as well as personal quick drench equipment that could be used in such locations (Ex. 3–3, ANSI Z358.1).

OSHA requests comment on whether the final rule should adopt the approach in the ANSI standard that quick drench facilities be located within a maximum distance (e.g., distance traveled in 10 seconds) of the hazard. In your establishment and industry, where are quick drench facilities located? How close to the immediate work areas are they located and generally how long does it take an injured employee to reach them? What type of quick drench facilities are provided for use in areas where a permanent (plumbed) facility cannot be placed?

Paragraph (f)—Basket Stretchers—In paragraph (f), OSHA is altering the requirements for basket stretchers. Paragraph (f) proposes that an adequate number of basket stretchers, or the equivalent, be readily accessible. OSHA also proposes that they be equipped with permanent lifting bridles that enable the stretcher to be attached to hoisting gear and be capable of lifting at least 5,000 pounds. In addition, these basket stretchers must be capable of securely restraining the injured employee and provide a blanket or other suitable covering. Finally, the basket

stretchers must be stored in a clearly-marked location, be protected from damage and be inspected to ensure they remain in a safe and serviceable condition.

Number of basket stretchers. In paragraph (f)(1), OSHA proposes to revise the existing requirements (§ 1915.98(d)) on the required number of basket stretchers used to remove injured employees from vessels. Section 1915.98(d) currently requires that employers provide at least one basket stretcher (or equivalent) ''for each vessel on which ten (10) or more employees are working,'' but does not require the employer to provide more than two stretchers ''on each job location.'' Employers are exempted from this requirement where ambulance services carry such stretchers. Where basket stretchers are required, they must be equipped with lifting bridles and a blanket, and kept close to the vessel.

SESAC members raised a number of concerns about the existing section. Members said the provision was unclear about whether a basket stretcher must be dedicated solely to a vessel or whether it could be used for all vessels located within a specific area (e.g., on the same pier) (Docket SESAC 1993–1, Ex. 100X, pp. 147–167). SESAC also said it was unclear what the term ''job location'' refers to (e.g., a pier, a vessel, or a work area onboard a vessel).

Several SESAC members said it was burdensome and unnecessary to require that basket stretchers be dedicated solely to one vessel and that there was no reason to provide more stretchers than were capable of being hoisted. SESAC members pointed out that since many shipyard locations have only one crane, and only one basket stretcher can be moved at one time, only one basket stretcher should be required. (Docket SESAC 1992–2, Ex. 104X, pp. 146—147; Docket SESAC 1993–1, Ex. 100X, pp. 155–158).

Other SESAC members said the provision was not protective enough. Specifically, they were concerned that the provision did not appear to require basket stretchers if fewer than 10 employees worked onboard a vessel, a cutoff that appeared arbitrary to them. They also said that OSHA should make explicit that the provision applies to vessel sections in addition to vessels (Docket SESAC 1993–1, Ex. 100X, pp. 142–143, 147).

Location of basket stretchers. In paragraph (f)(1), OSHA proposes a performance-based provision requiring that employers provide basket stretchers so they are readily accessible when work is being performed onboard a vessel or vessel section. The proposed requirement recognizes that, in some situations, having just one basket stretcher at a location where work is being performed on vessels or vessel sections may be adequate to ensure ready accessibility. For example, as SESAC members stated, if a crane is capable of hoisting a basket stretcher from any one of several barges docked together, one stretcher may provide ready accessibility for that group of vessels. Likewise, where a shipyard crane mounted on railtracks can move back and forth to hoist a basket stretcher from one of several vessels or vessel sections, one stretcher may be adequate to remove injured employees from any of those vessels or vessel sections (Docket SESAC 1993–1, Ex. 100X, p. 155).

In other situations, however, one basket stretcher may not be adequate to ensure that one is readily accessible. In very large shipyards that have several work locations with hundreds, if not thousands, of employees working far apart on vessels and vessel sections, more than one basket stretcher may be needed to ensure that one is readily accessible to each work location. Some SESAC members also said additional stretchers should be provided where it is necessary to speed up removal of injured employees (Docket SESAC 1993–1, Ex. 100X, p. 159). Having additional stretchers allows first aid providers to ready other injured employees for removal while the first employee is being lifted to shore.

OSHA believes the proposed revision is a reasonable approach that will provide effective protection for employees. In certain circumstances, basket stretchers will need to be provided even when fewer than 10 employees are working onboard a vessel, an issue that concerned SESAC (Docket SESAC 1993–1, Ex. 100X, p. 147). At the same time, it gives employers flexibility to tailor their efforts to the specific conditions and equipment present at the work area.

OSHA requests comment on the proposed provision. In your establishment how many basket stretchers are provided and where are they located? Are basket stretchers provided for vessel sections and when fewer than 10 employees are working onboard a vessel or vessel section? If not, what measures are used to ensure that injured employees are removed safely and quickly in these situations?

Exception. In paragraph (f)(1), OSHA proposes to delete language in the existing rule (§ 1915.98(d)) stating that the requirement to provide basket stretchers does not apply where ambulance services are available and carry such stretchers. OSHA believes this language is no longer necessary since the proposed language in paragraph (f)(1) ensures that basket stretchers are ''readily accessible.'' The proposal gives employers flexibility to provide their own stretchers or utilize the stretchers provided by local emergency squads if they are readily accessible. OSHA requests comment on whether local emergency squads are readily accessible to vessel work locations and whether they have basket stretchers that meet the proposed requirements. To what extent do shipyard employers rely on local emergency squads to provide basket stretchers?

Specifications for basket stretchers. In paragraph (f)(2), OSHA proposes to retain, with revisions, the existing specification requirements for basket stretchers (§ 1915.98(d)). Proposed paragraph (f)(2)(i) retains the existing requirement that basket stretchers have permanent lifting bridles to enable the stretcher to be attached to hoisting gear. OSHA proposes to add a strength requirement that basket stretcher bridles be capable of lifting at least 5,000 pounds (2,270 kg), which provides a safety factor of five. The proposed addition is based on requirements in the Marine Terminals and Longshoring standards, which were updated in 1997 (§§ 1917.26(d) and 1918.97(d)).

In paragraph (f)(2)(ii) OSHA proposes to add a requirement that basket stretchers have restraints that are capable of securely holding the injured employee while the stretcher is lifted or moved. This addition is also based on the Marine Terminals and Longshoring standards (§§ 1917.26(d)(4) and 1918.97(d)(4)). OSHA believes it is appropriate to apply the Marine Terminals and Longshoring provisions to shipyard employment because the use of basket stretchers and the working conditions are similar. The proposed changes should not pose a problem for shipyard employers because most basket stretchers already meet those criteria.

Finally, in paragraph (f)(2)(iii) OSHA proposes to retain the existing requirement that each basket stretcher have a blanket or other suitable covering to cover injured employees and protect them from environmental conditions.

OSHA requests comment on the proposed specifications for basket stretchers. The Marine Terminals and Longshoring standards also have specifications for stretchers and bridles to make vertical patient lifts (§§ 1917.26(d)(5) and 1918.97(d)(5)). OSHA requests comment on whether the final standard should include those additional specifications.

Storage of basket stretchers. In paragraph (f)(3), OSHA proposes to add a requirement that basket stretchers be stored in a clearly-marked location and in a manner that prevents damage and provides protection from environmental conditions. The proposed language is based on similar requirements in the Marine Terminals and Longshoring standards (1917.26(d)(7) and 1918.97(d)(7)).

The addition of this provision would accomplish two goals. First, requiring storage areas to be clearly marked helps to ensure that stretchers are easy to locate when they are needed. Second, storing stretchers so they are protected from damage and environmental conditions prevents deterioration of the equipment. OSHA requests comment on the proposed provision. In your establishment and industry, how are basket stretchers stored to protect them from damage and environmental conditions? How are storage areas marked to ensure easy access?

Inspection. Proposed paragraph (f)(4) would require the employer to inspect stretchers at intervals that ensure they remain in safe and serviceable condition. This is a flexible, performance-based measure similar to the requirement to inspect first aid supplies to ensure they are adequate. This proposed measure will assure that lifesaving equipment functions properly when needed in an emergency and is particularly important if basket stretchers are not used frequently.

Automated External Defibrillators (AEDs)

OSHA is raising for discussion the issue of whether shipyards should be required to have Automated External Defibrillators (AEDs). According to the American Heart Association, over 300,000 individuals die from cardiac arrest each year, with most occurring outside hospitals (Ex. 8). In 2001 and 2002, there were 6,628 work-related fatalities reported to OSHA—1,216 of these deaths were from heart attack, 354 from electric shock, and 267 from asphyxia (Ex. 6). Survival rates for out-of-hospital cardiac arrest are only one to five percent, but treatment of ventricular fibrillation (i.e., chaotic beating of the heart) with immediate defibrillation (i.e., within one minute) has achieved survival rates as high as 90 percent (Ex. 7). Fast and immediate defibrillation is the most critical step in treatment of cardiac arrest because it is the definitive therapy for ventricular fibrillation.

AEDs restore normal heart rhythm with electrical shock (defibrillation). AEDs have been shown to significantly increase survival rates where they are used immediately (i.e., within three to five minutes). For example, in the first 10 months after Chicago's O'Hare and Midway Airports installed AEDs, 9 of 14 (64 percent) cardiac victims were revived and survived (Ex. 7).

In the past decade, there have been significant advances in AED technology, including advances in miniaturization and improvements in their reliability and safety. Today, AEDs are small, lightweight units in portable carriers; run on rechargeable batteries; analyze the heart rhythm; and automatically indicate when to shock with easy-to-follow audio prompts. These improvements have also greatly minimized the training needed to operate them. Many studies have shown that AEDs are nearly error-free and effective when used by non-medical first aid responders in the workplace (Ex. 7). The costs of AEDs have dropped dramatically in recent years. In 2001, for instance, AEDs cost $3,000–$4,500 on average. Now they are widely available for less than $1,500 (Ex. 5). OSHA anticipates that AED costs will continue to decline as the use of AEDs increases.

OSHA's existing medical services and first aid standards do not require that AEDs be provided in workplaces or that employees be trained in their operation. However, many employers, concerned that local emergency services cannot respond quickly enough, have been equipping their workplaces with AEDs and training employees in their use.

OSHA requests comment on whether shipyards should be required to have AEDs as part of their first aid and medical services. If not, why not? If so, should the requirement apply to all shipyards or be limited to certain types of work or work locations (e.g., remote work areas, work where employees are exposed to electrical hazards, shiftwork)? What criteria should employers use to determine whether and how many AEDs should be provided and where they should be located? In your establishment and industry are AEDs provided? If not, why not? If so, how many are provided and what criteria were considered in making that determination? Who is trained and authorized to operate the AEDs?

Section 1915.88 Sanitation

Sanitation in shipyards is currently covered by a shipyard standard, § 1915.97, and is supplemented by a general industry standard, § 1910.141. (See Ex. 16–9, OSHA's Tool Bag Directive.) As part of its overall efforts to incorporate comprehensive shipyard requirements into Part 1915, the Agency is proposing to consolidate and update these provisions in a new standard on sanitation, § 1915.88. The new proposed section carries forward many provisions that have applied to shipyards for several decades. At the same time, it reflects improvements in workplace sanitation that have been developed since the earlier standards were adopted.

Adverse health effects associated with the lack of appropriate sanitation facilities are well recognized and documented. They include communicable diseases, heat-related illness, health effects related to delay of urination and defecation, and effects associated with ingestion or absorption of hazardous or toxic substances. These health hazards were discussed at length in the preamble to the final Field Sanitation standard (52 FR 16050, 5/1/87). OSHA has updated this discussion and placed it in the docket as a reference document (Ex. 12).

OSHA recognizes that working conditions in shipyards are often less than ideal for sanitation. For example, some shipyards are in remote locations, without adequate piped water and sewer facilities. Much shipyard work is also performed outdoors, often in high temperatures and humidity. OSHA has previously developed sanitation standards to address these types of working conditions in marine terminals (§ 1917.127), field sanitation (§ 1928.110), longshoring (§ 1918.95), and construction (§ 1926.51). The Agency has used these standards as source documents for the present proposal. In addition to these sources, OSHA has also reviewed the most recent applicable ANSI sanitation standards—in particular, ANSI Z4.1–1995 (Ex. 3–6) and Z4.3–1995 (Ex. 3–7)—and incorporated relevant provisions into the proposed standard. (ANSI Z4.1 addresses general sanitation in workplaces, while ANSI Z4.3 covers non-sewered waste disposal systems.)

Most of the changes being proposed in § 1915.88 reflect changes in technology and sanitation practices that have developed since the original standards were adopted. For example, the proposal specifically addresses portable toilets and other portable sanitation facilities. The proposed standard is also more performance-oriented and flexible than the existing requirements.

As Table 3 makes clear, many of the changes being incorporated into proposed § 1915.88 are editorial in nature. This reflects the Agency's effort to merge most of the current requirements of § 1910.141 and § 1915.97 into a single set of sanitation requirements for shipyards. Table 3 provides an overview of the new proposed § 1915.88, a comparison to the

existing requirements, and a brief explanation of all proposed changes. The preamble discussion following Table 3 focuses on the relatively few substantive changes being proposed, the Agency's rationale for these changes, and related issues. In addition, the discussion includes responses to various SESAC recommendations, as appropriate.

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Table 3: Proposed Shipyard Employment Sanitation Standards: Existing Standards and Explanations

Proposed Sanitation Standards	Currently Applicable General Industry and Shipyard Standards	Explanation of Proposed Changes
1915.88 (a) General Requirements		
1915.88(a)(1) The employer shall provide adequate and readily accessible sanitation facilities		New general provision; see discussion below.
1915.88(a)(2) The employer shall supply and maintain each sanitation facility in a clean, sanitary, and serviceable condition.	**1910.141(d)(1);** **1910.142(d)(10)**	Combined current requirements, simplified and clarified.
1915.88(b) Potable water.	**1910.141(b)(1)**	
1915.88(b)(1) The employer shall provide potable water for all employee health and personal needs and ensure that only potable water is used for these purposes. **1915.88(b)(2)** The employer shall provide potable drinking water in amounts that are adequate to meet the health and personal needs of each employee.	**1910.141(b)(1)(i)**	Current requirement simplified and clarified.
1915.88(b)(3) The employer shall dispense drinking water from a fountain, a covered container with single-use drinking cups stored in a sanitary receptacle, or single-use bottles. The employer shall prohibit the use of shared drinking cups, dippers, and water bottles.	**1910.141(b)(1)(iii)** **1910.141(b)(1)(v)** **1910.141(b)(1)(vi)**	Current requirements, combined into one paragraph, simplified and clarified. The proposal expands the existing rule by permitting drinking water to be dispensed from single-use bottles as well as from covered containers or fountains. OSHA is aware that some employers provide bottled water in single-use size for employees who work in mobile crews and in areas where it is not possible to install water fountains, such as onboard vessels and vessel sections. Provided that this bottled water is not used more than once and not shared among employees, OSHA believes that this method of dispensing water is as effective in preventing contamination as dispensing water from water fountains or covered containers and gives employers greater flexibility in complying with this requirement.
1915.88(c) Non-potable water	**1910.141(b)(2)**	

Proposed Sanitation Standards	Currently Applicable General Industry and Shipyard Standards	Explanation of Proposed Changes
1915.88(c)(1) The employer may use non-potable water for other purposes such as firefighting and cleaning outdoor premises so long as it does not contain chemicals, fecal matter, coliform or other substances at levels that may create a hazard for employees.	**1910.141(b)(2)(iii)**	Current requirements, combined into one paragraph, simplified and clarified.
1915.88(c)(2) The employer shall clearly mark non-potable water supplies and outlets as "not safe for health or personal use."	**1910.141(b)(2)(i)**	Current requirement, combined into one paragraph, simplified and clarified.
1910.141(b)(2)(ii) Current provision on construction of non-potable water systems is not being carried forward in the proposal.	**1910.141(b)(2)(ii)**	Provision is not needed because State and local codes adequately address this hazard.
1915.88(d) Toilet facilities.	**1910.141(c)**	
1915.88(d)(1) General requirements. The employer shall ensure that sewered and portable toilet facilities: **1915.88(d)(1)(i)** Are separate for each sex, except as provided in (B) below; **1915.88(d)(1)(i)(A)** The number of toilet facilities provided for each sex shall be based on the maximum number of employees of that sex present at the workplace at any one time during a workshift. A single occupancy toilet room shall be counted as one toilet regardless of the number of toilets it contains. **1915.88(d)(1)(i)(B)** The employer does not have to provide separate toilet facilities for each sex where they will not be occupied by more than one employee at a time, can be locked from the inside, and contain at least one toilet.	**1910.141(c)(1)(i)**	Current requirement, separated into distinct requirements, simplified and clarified. The proposal would allow employers to supplement required sewered facilities with portable facilities and it would add requirements for the construction and maintenance of such facilities.
Current provision on sewage disposal method is not being carried forward in the proposal.	**1910.141(c)(1)(iii)**	Provision is not needed because hazards are adequately addressed by other proposed provisions.

Proposed Sanitation Standards	Currently Applicable General Industry and Shipyard Standards	Explanation of Proposed Changes
1915.88(d)(1)(ii) Ensure privacy at all times. Where a toilet room contains more than one toilet, each toilet shall occupy a separate compartment with a door and walls or partitions between them that are sufficiently high to ensure privacy.	**1910.141(c)(2)(i)**	Current requirement simplified and clarified.
1915.88(d)(2) Sewered toilet facilities. The employer shall provide at least the following number of sewered toilet facilities for each sex.	**1910.141(c)(1)(i)**	Current requirement simplified and clarified.
Number of employees of each sex / Minimum number of toilet facilities 1 to 15 / 1 16 to 35 / 2 36 to 55 / 3 56 to 80 / 4 81 to 110 / 5 111 to 150 / 6 Over 150 / 1 additional toilet facility for each additional 40 employees. Note to Table F-2. Where toilet facilities will only be used by men, urinals may be provided instead of toilet facilities, except that the number of toilets in such cases shall not be reduced to less than 2/3rds of the minimum specified.	**TABLE J-1**	This provision is discussed in more detail below. OSHA is not proposing to change its current requirements for numbers of toilet facilities. Recent editions of applicable ANSI standards apply different ratios to determine the number of facilities for given numbers of employees. This issue is discussed in more detail below.
1915.88(d)(3) Portable toilet facilities. In addition to the required number of sewered toilet facilities, the employer may also provide portable toilet facilities. The employer shall ensure that each portable toilet facility is maintained in a clean, sanitary and serviceable condition; equipped with adequate venting; and, as necessary, lighting and heating.		These are new requirements for employers opting to provide supplemental portable toilet facilities These requirements ensure that portable toilet facilities and supplies remain in clean, sanitary and serviceable condition. Requiring portable facilities to meet these conditions also will encourage their use and help to prevent adverse health effects associated with lack of appropriate sanitation facilities. The ANSI Z4.3 standard provides useful information on the frequency of servicing portable toilets to ensure that they remain clean and sanitary (Ex. 32-7). See discussion below.

Proposed Sanitation Standards	Currently Applicable General Industry and Shipyard Standards	Explanation of Proposed Changes
1915.88(d)(4) Exception for normally unattended work locations. The requirement to provide toilet facilities does not apply to normally unattended work locations and mobile work crews, provided that the employer ensures that employees have immediately available transportation to readily accessible sanitation facilities that are maintained in a clean, sanitary and serviceable condition and meet the requirements of this section.	**1910.141(c)(1)(ii)**	This provision combines and simplifies the current exceptions from requirements for toilet facilities. Nearby toilet facilities must be in clean, sanitary and serviceable condition, and meet the other requirements of the section. See additional discussion below.
1915.88(e) Handwashing facilities		
1915.88(e)(1) The employer shall provide handwashing facilities at or adjacent to each toilet facility.		This provision requires handwashing facilities to be available near all toilet facilities, whether sewer-connected or portable.
1915.88(e)(2) The employer shall ensure that each handwashing facility:		
1915.88(e)(2)(i) Is equipped with either hot and cold or lukewarm running water and soap, or with waterless skin cleansing agents that are capable of disinfecting the skin or neutralizing the contaminants to which the employee may be exposed; and	**1910.141(d)(2)(ii)** **1910.141(d)(2)(iii)**	The proposal incorporates the existing requirements for handwashing facilities and expands them to allow the use of waterless cleaners. Information and studies in the record have demonstrated the efficacy of waterless cleaners. (Exs. 2-20; 2-22; 2-23; 2-24.) See additional discussion below.
1915.88(e)(2)(ii) If the facility uses soap and water, it is supplied with clean, single-use hand towels stored in a sanitary container, and a sanitary means of disposing of them, clean individual sections of continuous cloth toweling, or an air blower.	**1910.141(d)(2)(iv)**	Current requirement simplified and clarified.
1915.88(e)(3) Exception for normally unattended work locations. The requirement to provide handwashing facilities does not apply to normally unattended work locations and mobile work crews, provided that the employer ensures that employees have immediately available transportation to readily accessible sanitation facilities that are maintained in a clean, sanitary and serviceable condition and meet the requirements of paragraphs (e)(1) through (e)(2) of this section.	**1910.141(c)(1)(ii)**	This provision combines and simplifies the current exceptions from requirements for handwashing facilities. Nearby handwashing facilities must be equipped with waterless cleaning agents or soap, water (i.e., hot and cold or lukewarm) and hand towels or warm air blowers. Nearby facilities also must be maintained in a clean, sanitary and serviceable condition. See additional discussion below.

Proposed Sanitation Standards	Currently Applicable General Industry and Shipyard Standards	Explanation of Proposed Changes
1915.88(e)(4) The employer shall inform each employee engaged in the application of paints or coatings or in other operations where hazardous or toxic materials can be ingested or absorbed about the need for removing surface contaminants by thorough washing of hands and face at the end of the workshift and prior to eating, drinking, or smoking.	**1915.97(b)**	Current requirement, simplified and clarified. The proposal adds a new term, "hazardous or toxic substances," which is defined to include environmental contaminants.
1915.88(f) Showers.	**1910.141(d)(3)** **Showers.**	
1915.88(f)(1) When showers are required by an OSHA standard, the employer shall provide one shower for each 10, or fraction of 10 employees of each sex, who are required to shower during the same shift.	**1910.141(d)(3)(i)** **1910.141(d)(3)(ii)**	Current requirements, combined into a single provision, simplified and clarified.
1915.88(f)(2) The employer shall ensure that each shower is equipped with soap, hot and cold water, and clean towels for each employee who uses the shower.	**1910.141(d)(3)(iii)** **1910.141(d)(3)(iv)** **1910.141(d)(3)(v)**	Current requirements, combined into a single provision, simplified and clarified.
1915.88(g) Changing rooms. When an employer provides protective clothing to prevent employee exposure to hazardous or toxic substances, the employer shall provide the following:	**1910.141(e)**	Current requirement simplified and clarified. Proposal also expands existing standard to require employers to provide changing rooms whenever they provide protective clothing regardless of whether an OSHA standard requires the use of such clothing.
1915.88(g)(1) Changing rooms that provide privacy for each sex; and		This is a new requirement for shipyard employment. See additional discussion below.
1915.88(g)(2) Storage facilities for street clothes and separate storage facilities for protective clothing.	**1910.141(e)**	Current requirement simplified and clarified.
1915.88(h) Eating, drinking and break areas. The employer shall ensure that food, beverages and tobacco products are not consumed or stored in any area where hazardous or toxic substances may be present.	**1910.141(g)** **1910.141(g)(1)** **1910.141(g)(2)** **1910.141(g)(4)** **1915.97(c)**	Current requirements, combined into a single provision, simplified and clarified. Proposal also expands the existing standard to prohibit eating, drinking, smoking or storing food where hazardous or toxic substances, as defined in proposed §1915.95, may be present.
1910.141(f) Clothes drying facilities. Current provision is not being carried forward in the proposal.	**1910.141(f)**	Other provisions in the proposed section adequately addressed the hazards.

Proposed Sanitation Standards	Currently Applicable General Industry and Shipyard Standards	Explanation of Proposed Changes
1915.88(i) Waste disposal. **1915.88(i)(1)** The employer shall provide waste receptacles that meet the following requirements: **1915.88(i)(1)(i)** Each receptacle is constructed of materials that are corrosion resistant, leak-proof, and easily cleaned or disposable; **1915.88(i)(1)(ii)** Each receptacle is equipped with a solid tight-fitting cover, unless it can be kept in clean, sanitary and serviceable condition without the use of a cover; **1915.88(i)(1)(iii)** Receptacles are provided in numbers, sizes, and locations that encourage their use; and **1915.88(i)(1)(iv)** Each receptacle is emptied as often as necessary to prevent it from overfilling and in a manner that does not create a hazard for employees. Waste receptacles for food shall be emptied at least every day, unless unused.	**1910.141(a)(4)** **1910.141(a)(4)(i)** **1910.141(g)(3)**	Current requirements, separated into distinct provisions, simplified and clarified.
1910.141(a)(4)(ii) Current provision on removing all refuse and garbage in a manner to avoid creating a health menace and as often as necessary to maintain sanitary conditions is not being carried forward in the proposal.	**1910.141(a)(4)(ii)**	Proposed 1915.81(e) incorporates the requirements of the current provision. See previous discussion in the housekeeping section.
1915.88(i)(2) The employer shall not permit employees to work in the immediate vicinity of uncovered garbage that could endanger their safety and health. **1915.88(i)(3)** The employer shall ensure that employees working beneath or on the outboard side of a vessel are not contaminated by drainage or waste from overboard discharges.	**1915.97(d)**	Current requirement simplified and clarified.

Proposed Sanitation Standards	Currently Applicable General Industry and Shipyard Standards	Explanation of Proposed Changes
1915.88(j) Vermin control.	**1910.141(a)(5)** Vermin control.	§1910.141(a)(5) covers "every enclosed workplace." This proposal will include all workplaces within shipyard employment.
1915.88(j)(1) To the extent reasonably practicable, the employer shall clean and maintain the workplace in a manner that prevents the harborage of vermin such as rodents, insects and birds.	**§1910.141(a)(5)**	Current requirement, separated into distinct provisions. Retains current requirement that employers need only to take "reasonably practicable" steps to prevent harborage of vermin.
1915.88(j)(2) Where vermin are detected, the employer shall implement and maintain an effective control program.		
§1915.95 Definitions	**1910.141(a)(1)** *Current terminology and definitions.*	Proposed new and revised definitions are discussed further in the explanation of proposed §1915.95.
Portable toilet facility. A non-sewered facility for collecting and containing urine and feces. A portable toilet facility may be either flushable or non-flushable. For purposes of this section, portable toilet facilities do not include privies.		See discussion below.
Potable water. Water that meets the standards for drinking purposes of the state or local authority having jurisdiction, or water that meets the quality standards prescribed by the U.S. Environmental Protection Agency's National Primary Water Regulations (40 CFR part 141).	***"Potable water"***	Current definition updated. See explanation of proposed §1915.95.
Sanitation facilities. Facilities, including supplies, maintained for employee personal and health needs such as potable drinking water, toilet facilities, handwashing facilities, showers (including quick drenching/flushing) and changing rooms, food preparation and eating areas, first aid stations, and on-site medical service areas. Sanitation supplies include soap, waterless cleaning agents, single-use drinking cups, drinking water containers, toilet paper, and towels.	***"Personal service room"***	Current term "personal service room" replaced with updated "sanitation facilities" definition.

Proposed Sanitation Standards	Currently Applicable General Industry and Shipyard Standards	Explanation of Proposed Changes
Sewered toilet facility. A fixture maintained for the purpose of urination and defecation that is connected to a sanitary sewer, septic tank, holding tank (bilge), or on-site sewage disposal treatment facility and that is flushed with water.	*"Toilet facility"* *"Toilet room"* *"Urinal"* *"Water closet*	Proposal updates and, where appropriate, combines and incorporates current definitions. OSHA is proposing not to include the terms "water closet" and "toilet room" from §1910.141(a)(2). A water closet, which the existing standard defines as a toilet facility that is flushed with water, was the term used in ANSI Z4.1-1968, which was the basis for §1910.141 (Ex. 3-5). The current ANSI standard, ANSI Z4.1-1995, however, no longer makes a distinction between toilets that are flushed with water versus other types of flushing solutions. OSHA also proposes to delete the definition of the term toilet room because its meaning is self-evident. Other listed terms would not be included because the revised definitions incorporate all relevant information.
Vermin. Includes insects, birds, and other animals, such as rodents and feral cats, which may create safety and health hazards for employees.		New definition proposed.
The proposal does not carry these definitions.	**Other definitions currently in 1910.141(a)(1)** *"Nonwater carriage toilet facility,"* *"Number of employees"* *"Toxic material"* *"Wet process"*	These terms are either not used in the proposed sanitation requirements or do not need to be defined.

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Most of the changes in this proposal are adequately discussed in Table 3. However, some provisions require additional discussion and explanation. The following section provides additional discussion concerning these elements of the proposal and raises specific issues for public comment.

Paragraph (a)—General Requirements—Paragraph (a) incorporates a series of general requirements for the accessibility, adequacy, and maintenance of sanitation facilities in shipyards. It simplifies the existing standards and makes them apply more uniformly throughout the shipyard. The proposal also uses a new term, ''sanitation facilities'' (defined in § 1915.95), to cover the wide range of elements that employers provide for the ''health and personal needs of employees.'' Sanitation facilities include drinking water, toilets, handcleaning facilities, showers, changing rooms, and eating and drinking areas. The term also includes the supplies for those facilities, such as drinking cups, toilet paper, towels, soap, and waterless cleaning agents.

A sanitation facility cannot meet the employee's health needs unless it meets all the requirements addressing accessibility, adequacy and maintenance. For instance, if toilets are provided but are all located too far away, employees may have to refrain from using facilities, or from drinking during the workshift so they will not need to use them. Employees may do the same thing if toilets, particularly portable ones, are dirty, not serviced regularly, or require a long wait. These actions can result in significant adverse health effects (Ex. 12).

Proposed paragraph (a)(1) requires that sanitation facilities be (1) readily accessible, and (2) adequate for the number of employees at the work premises. Employers must provide sanitation facilities that meet both requirements in order to be considered in compliance.

Readily accessible. Unlike the sanitation standards for marine terminals, longshoring, and field sanitation (§§ 1917.127, 1918.127, 1928.110, respectively), the current sanitation standards for shipyards do not directly address the accessibility of sanitation facilities. Paragraph (a)(1) of proposed § 1915.88 remedies this omission, using performance-oriented language. Ready access to sanitation facilities helps to protect employee health and reduce the risk of adverse health effects. For example, lack of ready access to drinking water can result in dehydration, which can be fatal, especially in hot and humid working conditions. Ready access to sanitation facilities will also increase the likelihood of their use, reducing the risks associated with delayed use.

In order for sanitation facilities to be considered ''readily accessible,'' employees must be able to reach the facilities quickly whenever they need to use them, and there must be no obstacles to gaining quick access. OSHA recognizes that whether sanitation facilities are readily accessible depends on the type of sanitation facility, the sizes and locations of worksites, and physical characteristics of the shipyard. In small shipyards, sanitation facilities may be readily accessible if they are located in one area. However, where worksites are large and spread out, toilets, handwashing facilities and drinking water located in only one location would likely not be considered readily accessible.

Sanitation facilities also must be readily accessible to shipyard employees who work onboard vessels. Where employees work on a small vessel, sanitation facilities may be readily accessible if they are located dockside. However, where employees work on a large vessel, they may not be able to get to facilities quickly enough if such facilities are located only on the dock. Sanitation facilities may need to be located on deck or in various places throughout the vessel to ensure employees have ready access when they need to use them. When the ship's toilet and handwashing facilities are not available to shipyard employees working onboard vessels (e.g., the ship is being built or systems are turned off during repair) the employer needs to make other arrangements to ensure that such facilities are readily accessible.

Whether sanitation facilities are readily accessible is also related to how frequently they must be used during a workshift. For example, drinking water supplies, especially during hot and humid summer weather, must be at or close to the employee's immediate work area. Employees who perform heavy manual labor, work with heat-producing equipment, or must spend time in spaces that are not well ventilated or air-conditioned need to have enough drinking water close at hand to prevent dehydration. On the other hand, changing rooms and eating areas that are used only once or twice during a workshift may not need to be as close to the work area.

OSHA notes that other sanitation standards specify maximum distances for locating sanitation facilities relative to employee work areas. For example, the OSHA Field Sanitation standard requires that toilet facilities be located within a one-quarter-mile walk of each employee's place of work (§ 1928.110(c)(2)(iii)). ANSI Z4.1 requires that potable water and sewered toilet facilities be located within 200 feet of any place where employees are regularly engaged in work (Ex. 3–6, §§ 5.1.1 and 6.1.2).

On July 29, 1998, a shipyard employee was finishing up a workshift where he was operating grinding and sanding equipment on two decks of a ship. He clocked out at 2:30 p.m., got a ride to his supervisor's office to get some information, and was driven back to the wet dock. He was walking to the bike area when he became dizzy and fell to his knees. His supervisor picked him up and gave him water and a cold compress. He was transported to the first aid station, where he was given oxygen and ice packs were placed on his head and under his arms. When he later collapsed, emergency medical technicians ventilated and defibrillated him. He died later at a hospital from heat exhaustion and heat stroke, possibly from not having enough drinking water readily accessible at his work location. The existing drinking water requirements specify that employers provide potable water ''in all places of employment'' (§ 1910.141(b)(1)), but do not identify where water supplies must be located in those workplaces. The proposed rule clarifies the existing requirements by specifying that employers must provide adequate and ''readily accessible'' drinking water in amounts that meet the health and personal needs of each employee at the worksite (proposed § 1915.87(a)(1) and (b)(2)). In the summary and explanation of § 1915.87, OSHA also identifies factors that employers need to consider in determining how much drinking water they must supply and where it must be located. These factors include size and location of worksites, frequency of use, and environmental conditions such as hot weather. Had the proposed clarifications been in place, it would have been clearer that the shipyard employer needed to ensure that the employee had adequate drinking water accessible at their work location on the vessel.

OSHA requests comment on the proposed requirement for location of sanitation facilities. In particular, OSHA requests comment on whether the final rule should contain more specific requirements for the location of sanitation facilities, especially toilet facilities. For example, should the final rule specify maximum distances, maximum walking times (e.g., 5 or 10

minutes), or other objective criteria for determining where sanitation facilities must be located in the workplace? Should different specifications be developed for specific types of sanitation facilities? OSHA seeks information on where sanitation facilities are located and what criteria are used to make this determination.

Serviceable Condition. Paragraph (a)(2) proposes to add language making more explicit OSHA's longstanding policy that employers supply and maintain sanitation facilities in clean, sanitary and serviceable condition. The current general industry standard specifies that employers must keep all places of employment clean (§ 1910.141(a)(3)(i)). The proposal clarifies that this requirement applies to sanitation facilities at workplaces. The proposal also retains existing language on maintaining sanitary conditions from the current lavatory requirements (§ 1910.141(d)(1)).

Paragraph (a)(2), adds a proposed requirement for employers to maintain sanitation facilities in ''serviceable condition,'' which OSHA proposes to define (in § 1915.95) as the state or ability of a device to operate as it was intended by the manufacturer to operate. OSHA is including this new proposed provision primarily because the proposed rule allows the use of portable toilet facilities. Portable toilet facilities that are not properly serviced can become unsanitary and overflow, thereby exposing employees to contaminants or causing them to avoid using the facilities. While OSHA is not specifying detailed servicing requirements in the proposed rule, the Agency notes that ANSI Z4.3 contains useful information on servicing practices for portable toilets (Ex. 3–7).

OSHA requests comment on this provision. OSHA seeks information on the measures in place to ensure that sanitation facilities and supplies are maintained in clean, sanitary and serviceable condition. How often are sanitation facilities inspected, cleaned, and restocked? Are there different procedures and/or schedules for portable toilet facilities as opposed to other sanitation facilities?

Paragraph (b) Potable water—Proposed § 1915.88(b)(3) would expand the existing rule to allow employers to provide drinking water in single use bottles. OSHA requests comment on the proposal. Where and to what extent are single use drinking water bottles used in your shipyard?

OSHA is also considering adding a requirement to the final standard requiring employers to ensure that drinking water is ''suitably cool,'' a requirement from OSHA's Field Sanitation standard (§ 1928.110(c)(1)(ii)). The preamble to that standard explained that when employees work in hot and humid temperatures, the temperature of drinking water needs to be low enough to encourage them to drink and to cool their core body temperature (52 FR 16087). Some shipyard employees also work in very hot and humid environments. Cool water could help promote adequate hydration and reduce the risk of heat-related illnesses. OSHA requests comment on this issue. OSHA seeks information on the measures that have been implemented to ensure that drinking water is cool, especially for employees working on board vessels or in hot and humid weather.

Paragraph (d) Toilet Facilities—Proposed paragraph (d) adopts the existing requirements on sewered toilets and as noted in Table 3, the proposal would add a new paragraph (d)(3) to cover portable toilet facilities, which are not addressed by § 1910.141(c).

Because of the proposed additions for portable toilets, OSHA proposes to replace the existing term ''toilet facility'' with the terms ''sewered toilet facility'' and ''portable toilet facility.'' These terms are used in the current ANSI Z4.1 and Z4.3 standards, respectively (Ex. 3–6, § 2.4; Ex. 3–7, §§ 2 and 5). OSHA proposes to define these terms in § 1915.95. ''Sewered toilet facility'' would be defined to mean a fixture that is connected to a sanitary sewer, septic tank, holding tank (e.g., bilge), or on-site sewage disposal treatment facility and that is flushed with water. In contrast, ''portable toilet facility'' would be defined to mean a non-sewered toilet that may be either non-flushable, or flushable with water or a non-water flushing solution. Most portable toilet facilities used in shipyards are non-flush chemical toilet facilities.

Paragraph (d)(2) Sewered toilet facilities—*Minimum number of sewered toilet facilities.* Proposed paragraph (d)(2) would retain the existing requirements of § 1910.141 for the minimum number of sewered toilet facilities employers must provide for men and women. While the required numbers of facilities vary depending on the total number of employees at the work site, the basic requirement is commonly referred to as a ratio of one toilet for every 15 employees, and OSHA will use that terminology. OSHA adopted this requirement (Table J–1 of § 1910.141) from the 1968 ANSI Z4.1 standard through notice and comment rulemaking in 1973 (38 FR 10930, 10931 (5/3/1973)). It has been part of the general industry standards since that time. By contrast to the OSHA standard, the current ANSI standard has a different table of ratios (Table 4, ANSI Z4.1–1995), with a basic ratio of 1 toilet per 9 employees. In the three decades since OSHA adopted its standard, nearly 90 percent of the States, at either the State or local level, have adopted the 2003 International Plumbing Code (IPC 2003), which incorporates the requirements of the ANSI Z4.1–1995 standard (one toilet per 9 employees).

TABLE 4.—ANSI Z4.1–1995

Number of employees	Minimum number of stools
1 to 9	1.
10 to 24	2.
25 to 49	3.
50 to 74	4.
75 to 100	5.
Over 100	1 for each additional 30 persons.

OSHA requests comment on the proposal to retain the 1:15 toilet ratio from the existing standard. Should OSHA adopt the 1:9 ratio in the current ANSI Z4.1 and IPC 2003 standards? Would such adoption significantly improve OSHA's protection of employee health, and in what manner? What costs, if any, would result? If OSHA were to adopt the ANSI/IPC table, should its application be limited in any way, such as to facilities built after a certain date (e.g., the date the ANSI or IPC standards were adopted)?

Questions have been raised about whether toilet facilities are distributed adequately throughout shipyards. As noted earlier, the field sanitation and ANSI standards establish more specific requirements for location of toilet facilities relative to the location of the employee, 1/4 mile and 200 feet, respectively (§ 1928.110(c)(2)(iii); ANSI Z4.1, § 5.1.1 (Ex. 3–6)). OSHA requests comment on whether the final rule should contain specific requirements for the location of toilet facilities in shipyards. If not, why not? If so, what specifications should OSHA use? Should the same or different specifications apply for both sewered and portable toilets? Please explain.

Portable toilet facilities. As discussed in Table 3, proposed § 1915.88(d)(3) would allow employers to supplement the required numbers of sewered toilet facilities with either sewered or portable toilet facilities. OSHA's Marine Terminals, Longshoring, Construction, and Field Sanitation standards all permit the use of portable toilet facilities (§§ 1917.127(a)(1)(iv); 1918.95(a)(1)(iv); 1926.51(c)(3);

1928.110(b); see also ANSI Z4.1 §§ 2.9 and 6.4).

OSHA believes that allowing the use of portable toilet facilities in this manner will enhance employee safety and health and will not result in any adverse effects. This provision is justified by the significant improvements in portable toilet technology in recent years. Portable toilet facilities now contain the type of equipment necessary to provide for employee health needs at levels approaching that of the existing standard. For example, many portable toilet facilities are now manufactured with handwashing facilities that include hand towels, waste receptacles, and either running water or waterless cleaning agents. In addition, some portable facilities have flushable toilets (Ex. 2–3).

Allowing the use of portable toilet facilities will encourage employers to provide more facilities than the minimum required by the standard. It will enable them to provide such additional facilities without incurring construction expenses and inconvenience. OSHA believes that by allowing employers to also provide portable toilets, employers would be more likely to provide toilets in numbers that are closer to the 1 to 9 ratio in the ANSI Z4.1 and Z4.3 standards (Exs. 3–6; 3–7).

Permitting the use of portable toilets would allow and encourage employers to provide facilities in those work locations where it is extremely difficult if not impracticable to have sewage carriage systems. For example, employers could provide them on vessels, in dry docks, and in work locations where local plumbing or building codes prohibit installation of sewage systems. Allowing the use of portable toilet facilities also gives employers more flexibility in responding to changing workplace conditions. For example, it allows employers to respond quickly when work moves from location to location within the shipyard.

Finally, OSHA believes that allowing portable toilet facilities will enhance employee safety and health because it makes these facilities more accessible and thus more likely to be used. As mentioned, this is particularly important in work areas onboard vessels, where a significant portion of shipyard employees work and where sewered facilities may not be practicable.

OSHA requests comment on the proposed requirements for portable toilet facilities. What additional requirements, if any, should the final rule include in order to ensure that portable toilet facilities provide a level of service close to that provided by sewered toilet facilities?

OSHA is considering adding a provision that would require employers to provide portable toilet facilities in certain areas where it is unlikely sewered facilities could be installed such as in those areas of the workplace where there is a lack of water or the temporary nature of the work makes installing sewered toilet facilities impracticable. These work areas may include work onboard vessels and vessel sections and in dry docks. OSHA requests comment on whether the final rule should require employers to provide portable toilet facilities in these types of situations. If not, why not? If so, in what situations should they be required? How many portable toilets, at a minimum, should employers be required to provide? For instance, should OSHA adopt the ratios (i.e., toilets per employees) established in the ANSI Z4.3 standard?

OSHA requests comment on the use of portable toilet facilities in shipyards. When and where are portable toilet facilities used? What factors determine how many to provide and when and where to provide them?

Exemption. In paragraphs (d)(4) and (e)(3), OSHA proposes to combine and retain provisions exempting employers from providing toilet and handwashing facilities for mobile crews and for employees working in normally unattended worksites, provided that these employees have immediately available transportation to readily accessible sanitation facilities that meet the requirements of this section. The availability of vehicles at a worksite does not necessarily mean that the employees at that worksite are a ''mobile crew.'' OSHA has interpreted the term ''mobile crew'' to be limited to employees who continually or frequently move from jobsite to jobsite on a daily or hourly basis and to exclude employees who report to a worksite for days, weeks, or longer (Ex. 2–21; OSHA letter of interpretation to Nicolas Mertz, June 7, 2002).

For the purposes of these exceptions, ''immediately available transportation'' means that the vehicle is already at the specific worksite or can be summoned quickly enough so employees are able to get to facilities quickly. OSHA has interpreted ''nearby'' facilities as being within ten minutes of the employees work area (Ex. 2–21). Nearby toilet facilities must be in clean, sanitary and serviceable condition, and adequate for the number of employees who need to use them. Nearby handwashing facilities would have to be equipped with waterless cleaning agents or soap, water (i.e., hot and cold or lukewarm), and hand towels or warm air blowers.

OSHA requests comment on the proposed exemption. Should OSHA limit these exemptions in any way? For example, with the increasing availability of waterless cleaning agents, should OSHA require that mobile crews be provided with such supplies? What measures do shipyards currently use to ensure that mobile crews have immediate access to transportation to nearby toilet facilities?

Paragraph (e) Handwashing Facilities—*Location of handwashing facilities.* In paragraph (e)(1), OSHA proposes to add a requirement that handwashing facilities be located ''at or adjacent to each toilet facility,'' sewered and portable toilet facilities alike. This provision is necessary, in major part, to ensure that employees' health needs are met in those worksites where portable toilet facilities are or will be used. Some portable toilet facilities are not equipped with handwashing facilities and separate or stand-alone facilities are not always placed next to or close to portable toilets. This is particularly true onboard vessels and vessel sections. Often, employees must go to landside facilities, which may be located a significant distance away, to clean their hands. As a result, employees may not clean their hands when they are exposed to contaminants, after using a portable toilet, or before eating, drinking, or smoking, which puts them at risk of adverse health effects.

OSHA believes the proposed performance language gives employers flexibility in complying and should not pose problems, even at worksites where there is a lack of piped water or sewer lines. Many portable toilet facilities manufactured today contain either handwashing facilities or waterless cleaning agents. In addition, portable, stand-alone hand cleaning facilities are available and can be placed adjacent to portable toilet facilities. A single stand-alone handwashing facility may be able to serve several portable toilet facilities that are placed in one location. OSHA requests comment on the proposal.

Hand cleaning agents. OSHA proposes in paragraph (e)(2) to revise the existing requirements (§ 1910.141(d)(2)(ii) and (iii)) to allow handwashing facilities to be equipped with either (1) soap and hot and cold or lukewarm running water, or (2) waterless cleaning agents. The existing standard, as well as most of OSHA's other sanitation standards, requires that handwashing facilities have soap and running water (§§ 1910.141(d)(2)(ii) and

(iii), 1910.142(f)(3), 1917.127(a)(1)(i) and (ii), 1918.95(a)(1)(i) and (ii), 1928.110(b)). However, the Bloodborne Pathogens standard permits the use of alternatives (e.g., antiseptic hand cleaners) in limited circumstances (§ 1910.1030(d)(2)(iii) and (iv)).

OSHA has not proposed that the use of waterless cleaning agents be limited to those situations in which the lack of water or the temporary nature of the installation makes running water impracticable. OSHA does not believe the limitation is necessary since it is likely that waterless agents will be used most often in conjunction with portable toilet facilities. Whatever cleaning agents are used, the employer will be responsible for ensuring that they are effective in disinfecting the skin or removing the contaminants to which employees are exposed. In addition, the employer must select waterless agents that will not result in absorption of contaminants, sensitization of the skin, or other adverse health effects.

In OSHA's rulemaking on Bloodborne Pathogens, a number of organizations, including the Association for Professionals in Infection Control (APIC), the American Red Cross, Johns Hopkins University, and the American Society of Microbiology, supported allowing the use of waterless cleaners in those situations in which water was not available (56 FR 64004, 64116–17 (12/6/1991)). The National Institute for Occupational Safety and Health (NIOSH) said antiseptic hand cleaners and disposable disinfectant towelettes also were effective alternatives for soap and water for employees working in areas where there is a lack of running water (56 FR 64116). Based on the evidence in the record, OSHA accepted the use of alternative hand cleaning methods as an interim measure when soap and water are not feasible (e.g., firefighters, EMTs, police, paramedics). As noted in Table 3 above, the present record contains several studies conducted since that time, all of which further support the efficacy of waterless cleansers. Recent studies also show that waterless cleaners such as alcohol-based hand rubs reduce the number of bacteria on the hand more effectively than soap and water (Ex. 2–24). Alcohol gels, for instance, have been found to have excellent immediate antimicrobial effects and may reduce skin irritation that can occur from frequent washing with soap and water (Ex. 2–22). However, in certain circumstances they may accelerate the absorption of contaminants through the skin.

A number of shipyard operations are done at worksites where it may be difficult to provide running water and soap. Therefore, based on recent information and evidence, OSHA believes there is a practical need to allow the use of waterless cleaning and decontamination products in shipyards.

OSHA requests comment on the proposal to allow the optional use of waterless cleaning agents. In your establishment, to what extent are waterless cleaning agents used? If waterless cleaners are used, have they been received favorably by employees, and have employees experienced any problems with the cleaners (e.g., allergic reaction)?

Paragraph (j) Vermin control—OSHA proposes to revise the application of the existing requirement (§ 1910.141(a)(5)) on vermin control to make the provision more appropriate to shipyard employment. The existing requirement to clean and maintain the workplace in a manner that prevents the harborage of vermin only applies to ''enclosed'' workplaces. Proposed paragraph (j)(1) would extend its application by requiring the employer to take those steps necessary to control vermin throughout the shipyard. Thus, employers would need to expand their vermin control efforts to include outdoor worksites. Evidence in the record shows that employees working at outdoor worksites, as well as in enclosed spaces, need to be protected from the hazards associated with exposure to vermin (Ex. 2–12). For example, employees working near water are at risk of disease if mosquito populations are not adequately controlled. In addition, birds and rodents can transmit disease directly and through their feces (see *http://www.hhs.gov and http://www.cdc.gov* for information on vermin related diseases).

At the same time, OSHA recognizes that it is not possible to prevent all vermin, especially birds and insects, from entering outdoor worksites. Therefore, the proposal retains the existing provision requiring employers to take only those steps that are ''reasonably practicable'' to prevent the harborage of vermin.

In paragraph (j)(2), OSHA proposes to retain unchanged the existing requirement (§ 1910.141(a)(5)) that employers implement and maintain an effective control program where vermin are detected. OSHA proposes to define ''vermin'' to include insects, birds, and other animals, such as rodents and feral cats (proposed § 1915.95).

OSHA requests comment on the proposed vermin control provisions. What vermin are present and what types of controls are used to prevent their harborage in shipyard worksites?

Section 1915.89 Control of Hazardous Energy (Lockout/Tagout)

In § 1915.89, OSHA proposes to add requirements addressing the control of hazardous energy (lockout/tagout) during the servicing of machines, equipment and systems. The approach OSHA is proposing to adopt is that of the general industry standard (§ 1910.147), with minor revisions. (The general industry standard does not apply to shipyard employment.) The following discussion covers the need for a comprehensive lockout/tagout rule in shipyards, why OSHA is proposing to adopt the general industry approach, the requirements of the general industry standard, and the differences between proposed § 1915.89 and § 1910.147. In addition, this section includes an in-depth discussion of the application of the lockout/tagout standard while servicing commercial vessels, such as fish processing vessels. While OSHA welcomes comments on any and all aspects of the proposed standard, the discussion also includes specific issues for which OSHA is seeking comment on the proposal.

The need for a comprehensive lockout/tagout standard in shipyards. OSHA believes that a comprehensive rule protecting shipyard employees from hazardous energy during servicing, maintenance and repair operations is needed for several reasons. First, information in the record indicates that potential hazardous energy exposures are present throughout shipyard employment, on vessels and vessel sections as well as in landside operations (Exs. 9, 11). Servicing operations, which include activities such as constructing, installing and repairing equipment, are some of the riskiest operations in shipyard employment. For example, employees servicing ship's systems face considerable risk of injury from energization of those systems because they are often large and complex, and frequently have multiple power sources. That risk is compounded further when ships' crews and outside contractors also work onboard the vessel, which is a common occurrence.

There are numerous injuries and fatalities in shipyard employment that would be prevented by an effective lockout/tagout program. According to 2002 data from the BLS annual survey of occupational injuries and illnesses, in 30.3 percent of the shipyard injury and illness cases involving days away from work, the case resulted from contact with an object or equipment, and 1.8 percent of the cases resulted from being caught in equipment. According to BLS

CFOI data from 1993–2002, 10 shipyard fatalities (6.3%) resulted from contact with electrical current and 31 fatalities (19.5%) occurred because of contact with objects and equipment. OSHA's IMIS database also indicates that there have been numerous fatalities in shipyards that the proposed (lockout/tagout) provisions could prevent. Some of these fatalities are discussed below.

- In 2000, one employee was killed when he was crushed by a steering mechanism. Four employees were repairing the steering mechanism on a tow boat, which functions from electricity and hydraulics. The electricity was deenergized and secured, but the residual energy from the hydraulics was not relieved and rendered safe. The proposed provisions for stored energy may have prevented this fatality.
- In 1999, an employee installing a support cable was electrocuted when he came into contact with the energized high-voltage line that he was servicing. A secondary switch that should have been locked open to deenergize an electrical panel had been left closed. The proposed procedures to isolate and verify deenergization may have prevented this accident.
- In 1998, a shipyard employee was killed and another seriously injured when an elevator was energized while they were working under the edge of the flight deck on an aircraft carrier. Movement of the elevator during servicing could have been prevented if the elevator energy isolating device had been locked or tagged out.
- In 1996, an employee was killed and another was burned while checking a hydraulic power unit. The hose of the test gauge came in contact with an exposed, energized conductor in the motor start panel, which caused the hose to rupture and ignite the hydraulic fluid. Under the proposed lockout/tagout provisions, this accident could have been prevented because all systems would have been deenergized and deenergization would have been verified.
- In 1996, an employee was killed while working inside a 480-volt electrical cabinet. The disconnecting means for the cabinet were not properly identified, and the cabinet was not tested before work began. By following the proposed provisions for applying lockout/tagout devices and verification of isolation, this fatality may have been prevented.
- In 1990, an employee was killed while replacing an electric motor on a crane because the crane's brake was not locked. When the crane motor was unbolted, its drum and gear started spinning due to stored energy in the crane's cables and weights. The employee was struck with flying parts and killed. The proposed provisions would have ensured that before beginning work the energy would have been isolated, the machine deenergized, and the deenergization verified.

Second, the proposal is needed because the comprehensive general industry lockout/tagout standard exempts ''maritime employment'' from its scope (§ 1910.147(a)(1)(ii)). In the preamble to the final general industry standard, OSHA explained that shipyard employment was excluded not because working conditions were less hazardous, which the discussion above demonstrates, but rather because the unique nature of this industry and the means to minimize injury to employees required additional analysis and consideration, which had not been adequately addressed during the lockout/tagout rulemaking (FR 36644, 36657–58 (9/1/1989)). As a result, OSHA had insufficient information about hazardous energy in shipyard employment and about whether the general industry approach would address those hazards effectively. OSHA said it would continue to review information on hazardous energy in shipyard employment, evaluate the need to initiate rulemaking, and determine whether the general industry rule, or an appropriate modification of that rule, would provide optimal protection for shipyard employees. OSHA also said the Agency would present these matters to SESAC for consideration as part of the committee's review of shipyard standards. In 1993, after discussing the issues at length, SESAC recommended that OSHA adopt a comprehensive lockout/tagout standard (Docket SESAC 1993–3, Ex. 104X).

Third, a lockout/tagout rule is needed because the existing lockout/tagout provisions currently applicable to shipyard employment (§§ 1910.331–.335, 1915.162–.164, 1915.181) do not provide comprehensive or adequate protection for shipyard employees. For example, most of the existing provisions in part 1915 only address a limited number of servicing operations onboard vessels and do not address hazardous energy in landside operations. Conversely, the applicable general industry electrical safety requirements (§§ 1910.331–.335) apply only to landside operations and when shore-based electrical installations provide power for use aboard vessels, and do not cover qualified persons working on a vessel's permanently installed electrical system.

The requirements in the existing applicable provisions also are not as protective as the comprehensive procedures and requirements in the general industry standard. The existing provisions in part 1915 establish specific, but isolated, practices for controlling hazardous energy and none establish a comprehensive program for addressing those risks. For example, none of the existing part 1915 provisions require written lockout/tagout procedures, employee training, verification of deenergization or isolation, or periodic inspection, all of which the general industry standard requires (see Table 5).

The existing applicable lockout/tagout provisions also do not provide a consistent approach. As Table 5 shows, the provisions have a range of different approaches for shutting off, isolating and securing or otherwise protecting employees from reenergization. For example, when employees work on ship's boilers they must tagout and provide a second isolation of the energy, while employees working on electrical machinery must tagout and check the energy at the point of work. The proposed shipyard lockout/tagout standard would establish uniform minimum procedures that shipyard employers would have to follow in all shipyard servicing operations to protect their employees.

TABLE 5.—COMPARISON OF GENERAL INDUSTRY AND SHIPYARD LOCKOUT/TAGOUT STANDARDS

Source/standard		Means required to secure energy isolating device	Second isolation required when tagout device used?	Layers of isolation required	Number of isolations under employee "control"*	Deenergization verification required?	Required to check energy at point of work?	Employee training required?	Written procedure required?	Periodic inspection required?
§ 1910.147** General Industry lockout tagout.	Lockout Program	Lock	Not Applicable	1	1	Yes	Yes	Yes	Yes	Yes.
	Tagout Program	Tag	Usually	Usually 2	0 Or 1	Yes	Yes	Yes	Yes	Yes.
Part 1910 Subpart S Electrical.		Tag	Yes	2	1	Yes	Yes	Yes	No	No.
§ 1915.162 Ship's Boilers	Bolted Valves	Tag	Yes	2	1	No	No	No	No	No.
	Welded Valves	Lock & Tag	Yes	2	2	No	No	No	No	No.
§ 1915.163 Ship's Piping Systems.		Tag	Yes	2	2	No	No	No	No	No.
§ 1915.164 Ships' Propulsion Machinery.	Steam	Lock & Tag	Yes	1	1	No	No	No	No	No.
	Electrical Breaker	Tag	Yes	1	1	No	No	No	No	No.
	Electrical Fuse	Tag	Yes	2	1	No	No	No	No	No.
§ 1915.181 Subpart L Electrical Machinery.		Tag	Yes	1	2	Yes	Yes	No	No	No.

* Employee "control" means either a lock or an employee-made isolation layer.
** Only § 1910.147, which exempts maritime employment, requires a comprehensive lockout/tagout program.

Why OSHA is proposing to adopt the general industry approach? Based on a review of the information and consultations with SESAC, the Agency is proposing to adopt, with limited modifications, the same approach and requirements as the general industry lockout/tagout standard. OSHA believes this approach is appropriate for several reasons. First, the general industry standard has provided effective protection for affected employees. A lookback review of the general industry standard, conducted pursuant to Section 610 of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) and Section 5 of Executive Order (E.O.) 12866 concluded that the standard had been effective in reducing fatalities (65 FR 38302 (6/20/2002)). The review also concluded that the standard did not impose a significant impact on small business.

In addition to these analyses, commenters who participated in the lookback review, including companies (e.g., Bell Atlantic and Kodak), unions (e.g., United Auto Workers, United Steel Workers of America, and the International Brotherhood of Electrical Workers), employer groups (e.g., Organization Resources Counselors, Inc.), and professional societies (e.g., the American Society of Safety Engineers), stated that the standard had been effective in saving lives and preventing injuries. Most comments supported continuation of the standard because it had been effective in achieving its employee protection goals (65 FR 38304).

Second, many shipyard employers already have implemented lockout/tagout programs modeled on the general industry standard, and have reported that these programs have been effective in reducing the risk of harm associated with servicing operations. In addition, SESAC recommended using the proposed general industry approach as the framework for a recommended lockout/tagout rule for shipyards (Docket SESAC 1993–3, Ex. 104X, p).

Third, OSHA believes that the comprehensive energy control procedures, which are the cornerstone of the general industry standard, are particularly appropriate for addressing the types of workplace conditions and hazardous energy that are present in shipyard employment. The comprehensive procedures consist primarily of steps for deenergization, isolation of equipment from energy sources, and verification of deenergization before servicing operations are begun. OSHA believes that isolation of equipment from the energy sources in combination with adherence to established deenergization and energization procedures, and not just the application of locks or tags, is what ensures that employees are adequately protected (54 FR 36655). Locks and tags are applied after machines or equipment have been isolated. If equipment is not properly isolated and the procedures for deenergization and verification are not followed, neither application of a lock nor a tag will fully ensure employees are protected. This is especially true where systems, such as ship's systems, are complex, have several energy sources, or are serviced at the same time by many employees or crews who may work for different employers.

The comprehensive isolation and deenergization procedures in the general industry standard are also important where systems are not capable of being locked out, which is the situation for many ship's systems since shipyard employers do not own the ship's systems they service. In addition, the procedures the standard requires address conditions that are commonly present in shipyards, including multiple employer worksites and group servicing operations by multiple crews. Because of the range of workplace factors present in shipyard servicing operations, OSHA believes the comprehensive energy procedures in the general industry standard are necessary and appropriate to ensure that shipyard employees are adequately protected. Moreover, adopting the standard's employee training requirements will help to ensure that employees understand and adhere to the energy control procedures.

Fourth, OSHA believes that the general industry standard is appropriate because shipyard employment also includes landside operations, which are quite similar to general industry worksites. Landside facilities, such as metal fabrication shops, machine shops, electrical shops, sheet metal shops, and paint shops, are analogous to general industry shops performing the same types of work. Thus, the general industry requirements are readily applicable and appropriate for those operations.

Fifth, OSHA believes the general industry standard will be effective in controlling hazardous energy in complex shipyard work environments and in servicing complex ship's systems because the standard has proven effective under the same types of complex conditions found in general industry. The general industry lockout/tagout standard has been applied to approximately one million facilities, including complex chemical plants, petroleum refineries, nuclear power plants and motor vehicle assembly operations (65 FR 38303). The standard has been used to protect employees manufacturing sophisticated transportation equipment, such as train locomotives, aircraft and space vehicles. The general industry standard has also been applied in the manufacturing of complex military equipment, such as tanks, weapons systems and guided missiles.

Similar to ship's systems, some equipment and systems used in general industry have multiple sources and types of energy, back-up energy sources, and separate circuits for critical power needs (e.g., lighting). In addition, servicing operations in various general industry workplaces involve systems that may be located far away from system energy sources, just as energy sources of ship's systems are often located landside. Both general industry and shipyard servicing operations often involve contractors, work on equipment and systems the employer does not own, and have great variations in the equipment and systems being serviced.

Even though there may be some unique conditions in shipyards, OSHA believes that the flexibility of the general industry standard ensures that it will be effective in controlling hazardous energy in shipyard servicing operations. OSHA requests comment on the proposal to apply the general industry lockout/tagout standard to shipyard employment. Are there any unique conditions in shipyards that make the general industry standard incompatible or inapplicable to shipyard employment? If so, please describe those conditions. The performance-based approach of the general industry standard gives employers flexibility in determining the type of energy control procedures that would most effectively protect shipyard employees who are servicing particular machines, equipment and systems. This flexibility will also allow shipyard employers to tailor their energy control procedures so they adequately address specific conditions that may have unique applications in shipyard servicing operations.

Adopting a lockout/tagout rule for shipyards that is consistent with the general industry requirements has several advantages. Colleges and safety and health training providers have trained large numbers of safety and health professionals on the general industry standard. Having similar standards for shipyards would help to ensure that there are adequate numbers of trained safety and health professionals available to help shipyard employers as they implement the

standard. It would also ensure that the numerous lockout/tagout publications and outreach materials OSHA has developed for the general industry standard are useable and immediately available to help shipyards comply with the provisions and protect their employees. Moreover, it would mean that the materials NIOSH, the states, and private organizations have developed for the general industry standard could be easily applied to shipyards.

Control of Hazardous Energy Onboard Commercial Vessels. OSHA proposes to include language in both proposed § 1915.89 and existing § 1910.147 to clarify several issues concerning the application of the hazardous energy standards to servicing operations onboard commercial vessels. In large part, these proposed additions are in response to recent events that have raised concerns about how OSHA covers the serious hazards associated with servicing of equipment and systems on fish processing vessels.

Fish processing vessels, often called ''floating fish factories,'' are commercial vessels that eviscerate, clean and prepare fresh, frozen and canned seafood. Generally, fish processing vessels perform the same operations and use the same types of equipment as landside fish processing plants; they just do so at sea. These vessels usually set anchor in fishing grounds for weeks or months at a time, processing fish and seafood that fishing boats unload onto them (Ex. 16–1). Some vessels, known as catcher/processors, also catch the seafood they process (Exs.16–1 through 16–3). Fish processing equipment onboard these vessels, as in landside facilities, is specific to the type of seafood being processed. Thus, at the end of each fishing season when the vessel returns to port new equipment is installed to process fish that will be caught during the next fishing season (Ex. 16–2).

OSHA estimates that there are about 200 U.S. fish processing vessels operating in and traveling through U.S. territorial waters (Exs. 16–1; 16–4). While the number of employees working on fish processing vessels is difficult to ascertain, OSHA estimates that each vessel employs about 100 to 120 processing employees, who live on the vessel throughout the season, for a total of approximately 2,500 employees (Ex. 16–2).

The need to address the hazards associated with servicing fish processing equipment was brought to OSHA's attention by a serious accident onboard a fish processing vessel working in the Bering Sea. On October 16, 2005, an employee, who was cleaning a vat used to process fish paste onboard a fish processing vessel, was seriously injured when the augers at the bottom of the vat suddenly started up. The churning augers trapped the employee's feet and legs and drew them into the machinery. It took coworkers two hours to free the employee from the machinery and another half day for a helicopter to arrive and airlift her off the vessel. The employee was flown to a hospital in Anchorage, Alaska, where her legs had to be amputated below the knees (Ex. 16–3).

Recently published injury statistics on the commercial fishing industry also support the need to address hazardous energy during servicing operations onboard floating fish factories. A study of serious injuries from 1991–98, collected by the Alaska Trauma Registry, determined that injuries related to fish processing equipment onboard vessels were the leading cause of injury in the industry (Ex. 16–5). These injuries accounted for more than one half of all injuries reported and many could have been prevented by implementing programs to control hazardous energy and applying lockout/tagout systems during servicing.

In light of these incidents, OSHA proposes to change its existing policy on the coverage of servicing and maintenance activities onboard commercial vessels, particularly fish processing vessels. In short, OSHA proposes adding language to § 1915.89 and § 1910.147 specifying that:

- Proposed § 1915.89 applies to the servicing of ship's systems by any employee, including but not limited to, ship's officers and crew of the vessel (see proposed § 1915.89(a)(2)(i)(A));
- Proposed § 1915.89 applies to the servicing of machines, equipment and systems that employees use in the course of performing shipyard employment operations (see proposed § 1915.89(a)(2)(i)(B)); and
- Existing § 1910.147, and not proposed § 1915.89, applies to the servicing of equipment onboard vessels that is used for inherently general industry operations such as fish processing (see § 1910.147(a) and proposed § 1915.89(a)(2)(iii)(C)).

Background and current policy. In order to fully explain OSHA's proposed changes, it is important to understand OSHA's current policy on the coverage of commercial vessels. This section discusses OSHA and U.S. Coast Guard authority over vessels, OSHA's current exemption of maritime employment from § 1910.147, and OSHA's current policy concerning application of § 1910.147 to floating fish processors.

Coast Guard/OSHA authority over vessels. Both OSHA and the U.S. Coast Guard have authority for the safety and health of employees onboard vessels. The Coast Guard has statutory authority to prescribe and enforce regulations affecting safety and health onboard *inspected* vessels and has exercised that authority. Therefore, OSHA does not have authority over those vessels (29 U.S.C. 653(b)(1); *Chao* v. *Mallard Bay Drilling, Inc. (Mallard Bay)*, 534 U.S. 235 (2002); Ex. 16–6; CPL 02–01–020 Coast Guard/OSHA Authority Over Vessels, 11/8/1996). However, OSHA does have authority over *uninspected* vessels (hereafter ''commercial vessels'') to the extent that the U.S. Coast Guard has not regulated a specific hazard or working condition (*Mallard Bay,* 534 U.S. at 244–45; Ex. 16–6). Almost all vessels used in the fish processing industry are uninspected, therefore they are within OSHA's authority (Ex. 16–6). Moreover, to date, the Coast Guard has not regulated the control of hazardous energy during the servicing and maintenance of equipment on commercial vessels. Therefore, OSHA has authority to regulate hazardous energy onboard commercial vessels. (OSHA notes that the Coast Guard has issued a limited regulation on machine guarding during production operations. See 46 CFR 28.215; 56 FR 40364, 40374 (8/14/1991) (''Running machinery is required to have hand covers, guards or railings to reduce the chance of personnel being inured while working around the moving gears, belts, and chains'').

Where OSHA has authority over commercial vessels, the Agency generally has applied part 1910 standards to control hazardous working conditions (Ex. 16–6). However, OSHA has applied part 1915, and not the general industry lockout/tagout standard, to controlling hazardous energy during ''ship repair'' operations onboard commercial vessels. Ship repair is defined at § 1915.4(j) as ''any repair of a vessel including, but not restricted to, alterations, conversions, installations, cleaning, painting, and maintenance work.'' Pursuant to that definition, OSHA has interpreted ship repair as including the servicing of all equipment and systems on commercial vessels, regardless of who performs the operation or whether the equipment is a permanent or inherent part of the vessel or a temporary fixture unrelated to the vessel's core navigation functions (Exs. 16–7; 16–8).

''Maritime employment'' exemption. OSHA's current policy has been derived from language in the general industry lockout/tagout standard (§ 1910.147, 54

FR 36644) and Agency interpretations of it. The general industry lockout/tagout standard explicitly exempts ''maritime employment'' from coverage (§ 1910.147(a)(1)(ii)(A)). Although the standard and its preamble do not define maritime employment, in the preamble OSHA pointed to shipyard employment, longshoring and marine terminals as examples (54 FR 36655, 36657–36659).

The preamble cited several reasons for excluding maritime employment. OSHA said that including maritime employment, with its ''unique situations and work practices * * * would unduly complicate development of a generic energy control standard for general industry'' (54 FR 36657). OSHA also said a lockout/tagout standard likely could be applied quite differently in maritime than in general industry. As a result, the general industry rule might need to be modified considerably in order to provide optimal protection for maritime employees. However, the process of examining maritime employment and modifying the rule to address those issues would delay providing needed protection for millions of general industry employees. OSHA also explained that it did not have adequate information in the lockout/tagout record on hazardous energy hazards in shipyard employment, marine terminals and longshoring to support including them in the standard.

In exempting maritime employment, OSHA noted that part 1915 has provisions that address deenergization during the servicing of certain vessel systems and equipment (54 FR 36657). Those provisions, in subparts J and L, pertain to ship's systems and machinery (e.g., § 1915.162 Ship's boilers; § 1915.163 Ship's piping systems; § 1915.163 Ship's propulsion machinery) and electrical circuits and distribution boards (§ 1915.181). Although part 1915 does not define ''ship's systems,'' generally the term is used to describe systems and equipment that are an inherent and permanent part of a vessel. The provisions in subparts J and L do not address the servicing of other types of equipment onboard vessels, such as fish processing equipment, and there are no other part 1915 standards addressing hazardous energy during the servicing of such equipment.

Interpretation of § 1910.147. After OSHA issued the general industry lockout/tagout standard, the Agency received two inquiries about its application to commercial vessels, specifically fish processing vessels. The first inquiry, in 1991, asked OSHA to clarify whether § 1910.147 applies to servicing ''the factory portion of floating fish processors'' (Ex. 16–7). OSHA responded that the maintenance of ''any equipment'' onboard vessels is included in the maritime exemption from § 1910.147. OSHA explained that the maritime employment exemption applies to ''shipyard employment,'' which includes ''ship repair'' (§§ 1910.15(a), 1915.4(i)). The Agency concluded that the definition of ship repair (''any repair of a vessel including, but not restricted to, alterations, conversions, installations, cleaning, painting, and maintenance work'') was broad enough to include maintenance work on ''any equipment on a vessel, including fish processing equipment'' (Ex. 16–7).

In the second inquiry, from the Arctic Alaska Fisheries Corporation in 1994, OSHA confirmed its previous interpretation of the maritime employment exemption, again concluding that part 1915 applies to maintenance of any equipment onboard ''all commercial vessels'' (Ex. 16–8). (See also, Ex. 16–9, OSHA's Shipyard ''Tool Bag'' Directive CPL 02–00–142, confirming the earlier interpretations.) The current OSHA policy embedded in these interpretations is that fish processing or other equipment installed on vessels for any purpose is considered part of the vessel; accordingly, repair of that equipment is ship repair under part 1915.

Proposed additions and changes. The most significant of the additions that OSHA proposes, § 1915.89(a)(2)(iii)(C) and § 1910.147(a)(1)(ii)(B), clarify how the Agency, in the future, intends to cover the control of hazardous energy onboard commercial vessels during the servicing of equipment used for fish processing and other inherently general industry operations. There are two options: (1) follow the existing policy of classifying such servicing operations as ''ship repair'' and continue to cover them under proposed § 1915.89, or (2) classify such servicing as general industry operations and cover them under the general industry lockout/tagout standard (§ 1910.147).

The first option, applying proposed § 1915.89 to all equipment onboard commercial vessels, would result in a single standard for servicing operations onboard vessels. The single standard would apply regardless of whether the servicing involves ship's systems or fish processing equipment or whether it is done at a shipyard or at sea. In other respects, however, this option would result in the application of different standards to fish processing employees and employers, which might result in confusion. For fish processing employees, it would mean that part 1910 standards would apply when they process fish and operate the equipment for production, but proposed § 1915.89 would apply when they clean or perform maintenance work on that same equipment. For employers who have both landside operations and floating fish processing facilities, it also would mean that proposed § 1915.89 would apply to servicing fish processing equipment on vessels, but § 1910.147 would apply to servicing the same equipment at landside facilities.

The second option, applying § 1910.147 to the servicing of fish processing and other inherently general industry equipment onboard vessels, will result in more uniform application of standards to fish processing and other general industry operations onboard commercial vessels. To illustrate, this option means that fish processing employees, who operate the processing equipment for production and perform the vast majority of all servicing of that equipment, will be uniformly covered by part 1910 standards during both the production and servicing operations. And for fish processing employers, part 1910 standards, including § 1910.147, would apply at both their landside and vessel-based fish processing operations.

The second option, however, will not result in completely uniform application of standards onboard vessels. Under option two, proposed § 1915.89 would apply to the servicing of ship's systems (i.e., systems and equipment that are an inherent and permanent part of the vessel), while § 1910.147 would apply to the servicing of inherently general industry equipment such as fish processing equipment. To determine which lockout/tagout standard applies, fish processing employers would have to determine first whether the equipment or system is an inherent and permanent part of the vessel (e.g., propulsion, navigation, electrical, ballast systems) or is used for performing inherently general industry operations.

For several reasons, OSHA believes it is appropriate to apply § 1910.147, and not proposed § 1915.89, to the servicing of inherently general industry equipment onboard vessels. First, fish processing and other general industry equipment are not core components of a vessel, but rather equipment placed on a vessel after the core vessel is built. In many cases general industry equipment may only be a temporary fixture on a vessel. As mentioned, fish processing equipment is changed typically at the end of every fishing season (Ex. 16–2). Given that, OSHA does not believe the equipment used to perform inherently

general industry operations is part of the ''vessel'' or that those servicing operations constitute the repair of it.

Second, fish processing and other inherently general industry operations onboard vessels are more closely associated with landside general industry operations than with shipbuilding, ship repairing, shipbreaking and related employment. For example, fish processing equipment onboard vessels is serviced almost exclusively by fish processing employees and not shipyard employees or others who regularly service ship's systems. This is true regardless of where the equipment is serviced—at sea, at port, or off the vessel. Rarely, if ever, do shipyard employees service fish processing or other inherently general industry equipment. When they do, the servicing is done as part of an overhaul of the entire vessel. At this point, the entire vessel, including the general industry equipment, is out of commission and the only operations being performed on or to the vessel are repair and maintenance. The proposal includes language covering this situation; specifying that when general industry equipment onboard vessels is serviced as part of an overhaul of the entire vessel proposed § 1915.89 will apply.

OSHA requests comment on the proposal to apply § 1910.147 to the servicing of fish processing and other equipment onboard vessels that is used for performing inherently general industry operations. What are the advantages and disadvantages of this proposed approach? Who services equipment onboard vessels that is used to perform inherently general industry operations? How frequently, if ever, do shipyard employees service general industry equipment onboard vessels and when does such servicing occur? What equipment onboard vessels, other than fish processing equipment, should OSHA classify as being used to perform inherently general industry operations? Should § 1915.89 or § 1910.147 apply to the servicing of inherently general industry equipment during an overhaul of the entire vessel? Please explain.

Servicing of ''ship's systems.'' OSHA proposes that part 1915 will continue to cover the servicing of all ''ship's systems'' (proposed § 1915.89(a)(2)(i)(A)). Proposed § 1915.95 defines ship's systems as machines, equipment and systems that are a permanent or inherent part of a vessel. These systems, which are numerous, include navigation, propulsion, power (e.g., electrical, hydraulic, steam), piping, ventilation, communication, waste, ballast, structural systems and systems to care for the crew of the vessel. Essentially, ship's systems are those systems that ensure the vessel's basic operational and navigational capability.

OSHA considers the servicing of ship's systems to be precisely the type of operation that the term ''ship repair'' was intended to cover. Servicing of ship's systems entails the repair and maintenance of core components of vessels. If these components are not maintained in proper working order, it is unlikely that the vessel will be fully operational or able to navigate properly. OSHA believes servicing ship's systems is at the very heart of shipyard employment and proposed § 1915.89 needs to apply.

OSHA notes that the language in proposed § 1915.89(a)(2)(i)(A) does not limit coverage to servicing ship's systems in certain locations. OSHA intends that § 1915.89 will apply to the servicing of ship's systems regardless of where such servicing occurs (e.g., on a commercial vessel at sea, at a commercial dock, in a shipyard) or who performs it (e.g., shipyard employees, contractors, fish processing employees, ship's crew). (See discussion of ship's crew below.)

OSHA believes it is necessary that part 1915 cover the servicing of all ship's systems in order to ensure that employees performing those operations are adequately protected from hazardous energy. Part 1915 was established and its standards are designed to address the ''unique'' hazards and working conditions associated with working on ship's systems, equipment and machinery. The hazards associated with ship's systems are particularly serious because these systems can be large, complex, and have multiple power sources and isolating devices. The hazards exist regardless of who services the ship's systems or where the servicing is done. OSHA believes that employees servicing ship's systems can best be protected from hazards if such servicing is covered by the standards designed to address the unique hazards and complexity of those systems.

Applying proposed § 1915.89 to the servicing of all ship's systems establishes a uniform set of standards for these systems, which is particularly necessary to ensure the protection of employees involved in multiple-employee or multiple-employer servicing operations. OSHA notes that the proposal includes additional procedures to further reduce the risk of harm for employees performing those types of servicing operations. However, these additional procedures will reduce that risk only if all employees working on the system are required to follow them. Applying proposed § 1915.89 to all employers and employees working on ship's systems will accomplish that.

Applying proposed § 1915.89 to the servicing of all ship's systems will also ensure that employees performing those operations have the most effective protection possible. These employees will have the protections of not only § 1915.89, but also the additional energy control requirements in subparts J and L. Those provisions establish specific steps that must be taken when servicing certain ship's systems and power sources, such as blanking piping systems, locking or removing fuses, and posting conspicuous warning signs where employees are working. Neither the general industry lockout/tagout standard, nor the part 1910 electrical standards in subpart S, includes requirements directed to specific vessel systems (54 FR 36657). OSHA believes the system-specific protections in subparts J and L are necessary for all employees working on ship's systems to prevent death or serious injury from the direct escape of high temperature mediums used to power the systems (e.g., steam, water or oil) or from powerful electrical currents.

Finally, including the issue of servicing of ship's systems in this rulemaking will ensure that the unique hazards those operations pose are fully examined and discussed. It also enables OSHA to properly consider the interrelationship between the proposed lockout/tagout provisions and the specific provisions in subparts J and L, action that OSHA said was necessary in the lockout/tagout rulemaking (54 FR 36657). OSHA requests comment on applying proposed § 1915.89 to the servicing of all ship's systems. Who services ship's systems when the vessel is at sea? What protection and benefits will result from applying proposed § 1915.89 to the servicing of all ship's systems?

OSHA also asks for comment on its proposed definition of ship's systems. What machines, equipment and systems should the definition include? Does the proposed definition adequately distinguish between systems that are part of a vessel and equipment that is used for inherently general industry operations? Are there other approaches that would more clearly differentiate between those types of equipment and systems? Please explain.

Machines and equipment used to perform shipyard employment operations. In proposed § 1915.89(a)(2)(i)(B), OSHA simply codifies its existing policy that part

1915 applies to the servicing of machines and equipment used during the course of performing shipyard employment operations. OSHA considers these servicing operations to be ''related employment'' specified in the definition of shipyard employment (§ 1915.4(i)). For example, the proposal covers the servicing of shore-based power systems used in the construction of ships, automated blasting equipment to remove paint from vessels, and equipment (e.g., metal working equipment) in shipyard shops that is used to make or modify vessel components (e.g., plates, piping).

Ship's crew. Proposed § 1915.89(a)(2)(i)(A) specifies that § 1915.89 applies to all servicing of ship's systems regardless of who performs it. This means that proposed § 1915.89 applies to ship's officers, crew of commercial vessels, and contractors that commercial vessel owners and operators hire to service ship's systems (collectively referred to as ''ship's crew'').

The proposed provision explicitly clarifies longstanding OSHA policy that part 1915 applies whenever ship's crew performs ship repairing operations. That said, OSHA is including the issue in this rulemaking in order to address concerns that certain courts have raised about part 1915's coverage provisions.

Although § 1910.15(a) specifies that part 1915 applies to ''every employment and place of employment of every employee engaged in ship repairing, shipbreaking, and shipbuilding, or related employment,'' some language in part 1915 suggests that the part does not cover certain shipyard employment activities or employees. Specifically, § 1915.4(d) states:

> The term employee means any person engaged in ship repairing, shipbuilding, shipbreaking or related employments * * * other than the master, ship's officers, crew of the vessel, or any person engaged by the master to repair any vessel under 18 net tons.

Section 1915.4 was brought over from the Longshore and Harbor Workers' Compensation Act (LHWCA) (33 U.S.C. 901 *et seq.*), which, along with the OSH Act, provides OSHA with rulemaking authority over shipyard employment. Prior to enactment of the OSH Act, the Secretary of Labor, pursuant to authority under LHWCA, promulgated occupational safety and health standards for shipbuilding to protect the life, health and safety of shipyard employees (33 U.S.C. 941(a)).

When Congress enacted the OSH Act in 1970, they authorized OSHA, within the first two years after the effective date of the OSH Act, to promulgate as occupational safety and health standards any established Federal standard (29 U.S.C. 655(a)). Pursuant to this authority, OSHA adopted all established Federal workplace safety and health standards in effect as of April 28, 1971, that pertained to employers, employees and employment covered by the OSH Act (§ 1910.11(a), 36 FR 10466 (5/29/1971)). This included the safety and health standards enacted under the LHWCA.

Since OSH Act coverage, which extends to employers engaged in business affecting interstate commerce, is broader than LHWCA coverage, OSHA consistently has held that the Agency is not bound by the coverage limitations in the LHWCA standards. To clarify this position, OSHA amended its incorporation by reference of established Federal standards (37 FR 26008 (12/7/1972)). Specifically, OSHA added paragraph (b) to § 1910.11 specifying that the Agency was incorporating ''only substantive rules affecting safety and health'' from established Federal standards (37 FR 26008). ''The incorporations by reference of Parts 1915, 1916, 1917, 1918 * * * are not intended to include the discussion in those parts of the coverage of the Longshoremen's and Harbor Workers' Compensation Act * * * '' (§ 1910.11(b)). OSHA explained that when it adopted the LHWCA safety and health rules the Agency had ''no intention of incorporating [into OSHA rules] * * * any other rules having special applicability under the laws under which the 'established Federal standards' were initially adopted'' (37 FR 26008). OSHA reiterated its position when the Agency consolidated the ship repairing, shipbuilding and shipbreaking standards into part 1915 Shipyard Employment (47 FR 16984, 16986 (4/20/1982)).

The Occupational Safety and Health Review Commission accepted the approach OSHA delineated in § 1910.11(b) (*Dravo* Corporation, 7 O.S.H. Cas. (BNA) 2089 (1980)). OSHA also has taken this position in the courts of appeals, however, three circuits have rejected OSHA's approach and applied the more restrictive language and limitations of the LHWCA provisions to cases arising under the OSH Act. *Tidewater Pacific, Inc.* v. *Herman,* 160 F.3d 1239 (9th Cir. 1998); *Kopcynski* v. *The Jacqueline,* 742 F.2d 555 (9th Cir. 1984); *Clary* v. *Ocean Drilling and Exploration Co.,* 609 F.2d 1120 (5th Cir. 1980); *Dravo Corporation* v. *OSHRC,* 613 F.2d 1227 (3rd Cir. 1980).

The court of appeals held in *Dravo* that, notwithstanding § 1910.11(b), OSHA would be held to the plain language meaning of its part 1915 standards, including the coverage standards carried over from the LHWCA. *Dravo,* 613 F.2d at 1232–3. The language at issue in *Dravo* concerned the location of shipyard employment activities, that is, whether part 1915 covered shipbuilding activities performed at a waterfront fabrication shop on an island in the Ohio River. The court looked to the definitions of ''employer'' and ''employee'' in § 1915.4, which indicate the terms are limited to persons engaged in shipyard employment ''on the navigable waters of the United States, including dry docks, graving docks and marine railways'' (§ 1915.4(c) and (d)). (A dry dock is a narrow basin or vessel that can be flooded to allow a vessel to be floated in and then drained so the vessel comes to rest on a dry platform. A graving dock is a type of dry dock.) The court said the plain meaning of the definitions did not include fabrication shops (''they include only water, docks, and marine railways'' *Id.*), and declined to construe the definitions more broadly:

> [A]n occupational safety and health standard must give an employer fair warning of the conduct it prohibits or requires * * * To strain the plain and natural meaning of words for the purpose of alleviating a perceived safety hazard is to delay the day when the occupational safety and health regulations will be written in clear and concise language so that employers will be better able to understand and observe them * * * The responsibility to promulgate clear and unambiguous standards is upon the Secretary. The test is not what he might possibly have intended, but what he said. *Id.*

The *Dravo* court concluded that if OSHA intends a different coverage scheme, the Agency must amend part 1915 through rulemaking. *Id.* Although OSHA disagrees with the *Dravo* decision, to avoid confusion OSHA is expressly stating the applicability of proposed § 1915.89. Specifically, proposed § 1915.89 will apply to the servicing of ship's systems by *any employee,* including ship's officers and crew of the vessel (§ 1915.89(a)(2)(i)(A)). (Similarly, in the proposal OSHA also has clarified that subpart F applies ''regardless of geographic location,'' even though the language of § 1915.4 limits ''employer'' to persons engaged in shipyard employment ''on the navigable waters.'')

The reasons for applying § 1915.89 to ship's crew have been discussed above and need not be repeated. OSHA believes that applying § 1915.89 to ship's crew should not come as a surprise to employers since OSHA has consistently applied part 1915

whenever ship's crew engage in shipyard employment (Ex. 16–9). Moreover, OSHA believes that the proposal to apply consistent coverage to ship's crew should reduce any confusion related to the split in the courts. OSHA requests comment on the proposed provision.

Clarification of ''maritime employment'' exemption in § 1910.147. OSHA proposes two technical revisions to the scope and application section of § 1910.147. The revisions clarify the meaning of the maritime employment exemption and provide notification of the proposed additions and policy changes discussed above. As mentioned, the general industry lockout/tagout standard exempted ''maritime employment'' (§ 1910.147(a)(1)(ii)(A)). Although the standard did not define maritime employment, OSHA has traditionally used the term as shorthand for the employment covered by parts 1915, 1917 and 1918. To eliminate possible confusion, OSHA proposes in § 1910.147(a)(1)(ii)(B) to replace the shorthand term with reference to the specific parts.

To clarify the exclusion from part 1915 of servicing of inherently general industry equipment, OSHA proposes to add the following note to § 1910.147(a)(1)(ii)(B):

> Section 1910.147 applies to the servicing of equipment onboard vessels that is used for inherently general industry operations such as fish processing. However, if such servicing is part of a general overhaul and repair of the entire vessel, part 1915 applies.

The proposed revisions do not affect the substantive requirements of § 1910.147. OSHA requests comment.

Economic analysis. OSHA notes that its preliminary economic analysis, a summary of which is included in this preamble, includes compliance costs for shipyards and shipyard contractors to implement proposed § 1915.89. It does not include the costs of fish processing employers to comply with proposed § 1915.89. This is because the economic analysis for the general industry lockout/tagout rulemaking included the compliance costs for implementing the standard in activities other than shipyard employment. It included compliance costs for the fish processing industry, which includes fish processing onboard vessels. OSHA invites comment on whether there are additional costs for controlling hazardous energy on fish processing vessels that the economic analysis for § 1910.147 may not have included. If so, please explain what those costs involve.

The requirements of the proposed § 1915.89 standard. OSHA is proposing to apply the general industry standard to shipyard employment in the same manner as it applies to general industry, except for the proposed changes described below. The preamble to the general industry lockout/tagout standard includes a detailed explanation of each of the standard's specific requirements, how they apply, and why they were adopted (54 FR 36654–83). OSHA is incorporating that document and the record of that rulemaking into this record. Therefore, OSHA will not repeat that discussion and instead will provide a short overview of the general industry requirements.

The general industry standard establishes minimum performance requirements for the control of hazardous energy. The rule requires that, before service or maintenance is performed, machinery and equipment must be turned off and disconnected from the energy source, the energy-isolating device must be either locked or tagged out, and the deenergization must be verified.

Scope and application (§ 1910.147(a), proposed § 1915.89(a)). The general industry Lockout/Tagout standard ''covers the servicing and maintenance of machines and equipment in which the *unexpected* energization or start up of the machines or equipment, or release of stored energy could cause injury to employees'' (§ 1910.147(a)(1)(i)). In proposed § 1915.89(a), OSHA is adopting this scope and application with a few changes. The proposal does not include the term ''unexpected'' that is used in describing the energization and startup the general industry standard covers. The proposal also makes more explicit that the standard also applies to ''systems.'' (These changes are discussed below in the section on the differences between proposed § 1915.89 and § 1910.147.)

The standard defines ''servicing and/or maintenance'' (hereafter collectively referred to as ''servicing'') as workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, maintaining, and servicing machines, equipment and systems (hereafter collectively referred to as ''equipment'')(§ 1910.147(b) and proposed § 1915.95). Servicing and maintenance activities are a necessary part of the industrial process. They are needed to maintain the ability of machines, equipment, systems and processes to perform their intended functions. Additionally, installation, construction, set-up, changeover, and dismantling are necessary and continuous industrial processes. The standard covers these types of operations because they also can expose employees to hazardous energy. The standard does not apply in the following situations:

- Servicing or maintaining cord and plug connected electrical equipment, provided that the hazards are capable of being controlled by unplugging the equipment from the energy source and the plug being under the exclusive control of the employee performing the service and/or maintenance;
- Hot tap operations that involve transmission and distribution systems for gas, steam, water, or petroleum products when they are performed on pressurized pipelines, provided that continuity of service is essential, shutdown of the system is impractical, documented procedures are followed, and employees are provided with alternative protection that is equally effective; and
- Servicing or maintaining machines, equipment or systems onboard vessels that are inherently general industry operations. This would include operations such as fish processing (proposed § 1915.89(a)(3)(iii)).

As discussed earlier, proposed § 1915.89 will now also cover all ship's systems and all employees.

Normal production operations (proposed § 1915.89(a)(2)(ii)). Although OSHA recognizes that machines and equipment present many hazardous situations during normal production operations (i.e., whenever machines and equipment are used to perform their usual production function), the scope of the standard is servicing and maintenance operations. Hazards associated with normal production are covered by rules in other general industry and shipyard standards, such as the requirements for general machine guarding (§ 1910.212), guarding power transmission apparatus (§ 1910.219), and guarding tools and related equipment used in shipyard employment (§§ 1915.131 and 1915.134).

OSHA recognizes that some servicing activities that occur during normal production, such as making fine adjustments to equipment, must be performed with the power on. This may include certain aspects of troubleshooting, for example, checking to ensure that the source of a production problem has been corrected. The standard exempts from coverage these servicing activities during normal production, provided that they are routine, repetitive and integral to the use of the production equipment. However, the employer must provide employees with alternative means of protection while performing these

activities and follow the standard's lockout/tagout procedures when servicing occurs with the power off.

In certain circumstances, however, some hazards encountered during normal production operations may be covered by the lockout/tagout rule. Servicing and maintenance performed during or as part of normal production operations (e.g., lubricating, cleaning or unjamming machines and equipment) are covered by the lockout/tagout standard when any of the following conditions occurs:

- The employee must either remove or bypass machine guards or other safety devices, resulting in exposure to hazards at the point of operation;
- The employee is required to place any part of his or her body in contact with the point of operation of the operational machine or piece of equipment; or
- The employee is required to place any part of his or her body into a danger zone associated with the operating cycle of the equipment.

Energy control program (§ 1910.147(c), proposed § 1915.89(b)). The lockout/tagout standard requires that the employer establish an energy control program to ensure that equipment is isolated and inoperative before any employee performs service or maintenance where the energization, start up, or release of stored energy could occur and cause injury. The program must include (1) documented energy control procedures; (2) an employee training program; and, (3) periodic inspections of the energy control procedures. Employers have the flexibility to develop a program and procedures that meet the needs of their particular workplace and the particular types of equipment being maintained or serviced.

Although the energy control program applies to all employees, it is directed primarily at those who have the greatest exposure to hazardous energy—authorized and affected employees. The standard defines ''authorized employees'' as those employees who apply lockout/tagout devices and who perform servicing operations (§ 1910.147(b), proposed § 1915.95).

''Affected employees'' include employees who operate, for normal production, the machines or equipment on which service is being performed as well as those employees whose job duties require them to work in the area where the servicing is being performed. The definition also specifies that an affected employee becomes an authorized employee when he performs servicing operations on the equipment.

Written energy control procedures (§ 1910.147(c)(4), proposed § 1915.89(b)(4)). The standard requires that written energy control procedures be developed, documented, and used to control potentially hazardous energy sources whenever employees perform activities covered by the standard. The written procedures must identify the information that employees must know in order to control hazardous energy during servicing.

The energy control procedures must outline the scope, purpose, authorization, rules and techniques that will be used to control hazardous energy sources, as well as the means that will be used to enforce compliance. At a minimum, each procedure must include the following elements:

- A statement on how the procedure will be used;
- The procedural steps needed to shut down, isolate, block, and secure equipment;
- The steps designating the placement, removal, and transfer of lockout/tagout devices, and who has the responsibility for them; and
- The specific requirements for testing equipment to determine and verify the effectiveness of locks, tags, and other energy control measures.

The standard requires that employers develop clear and specific written energy control procedures that have the level of detail necessary to ensure that employees know what steps and techniques they must follow to be protected from hazardous energy. Although procedures must be written in detail, the standard does not require separate procedures be written for each and every piece of equipment (54 FR 36670). Thus, if the procedures and information are the same for various equipment or if other logical groupings exist, then a single set of procedures may be sufficient. However, if equipment is not the same or other conditions are present that require specific consideration, such as multiple energy sources or different means of connection, then the employer must develop specific energy control procedures to address them and ensure employees are protected. For example, if a system requires that a unique shutdown sequence be followed, specific energy control procedures will be required for that system.

The standard includes an exception to the requirement to have written control procedures for particular equipment. A written procedure is not required for equipment if all of the following exist: (1) The machine, equipment or system has no potential for stored or residual energy or reaccumulation of stored energy after shut down that could endanger employees; (2) the machine, equipment or system has a single energy source which can be readily identified and isolated; (3) the isolation and locking out of that energy source will completely deenergize and deactivate the machine, equipment or system; (4) the machine, equipment or system is isolated from that energy source and locked out during servicing or maintenance; (5) a single lockout device will achieve a locked-out condition; (6) the lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance; (7) the servicing or maintenance does not create hazards for other employees; and (8) the employer, in utilizing this exception, has had no accidents involving the activation or reenergization of the machine, equipment or system during servicing or maintenance.

Energy-isolating devices (locks and tags) (§ 1910.147(c)(2) and (3), proposed § 1915.89(b)(2) and (3)). A primary tool for providing protection under the standard is the energy-isolating device, the mechanism that prevents the transmission or release of energy and to which locks or tags are attached. This device guards against equipment start-up or re-energization of equipment during servicing. There are two types of energy-isolating devices: Those that are capable of being locked and those that are not.

When the energy-isolating device cannot be locked, the standard requires that the employer use a tagout system. A tagout system consists of the required energy control procedures and extensive initial and periodic reinforcement training, including training on the limitation of tags (see training discussion below). However, where an energy-isolating device is lockable, the standard requires that lockout be used unless the employer can show that the use of a tagout system provides ''full employee protection'' equivalent to that obtained by using a lockout program (54 FR 36655).

''Full employee protection'' means that the employer affixes the tagout device at the same location that the lock would have been attached and demonstrates that the tagout program provides equivalent protection. To demonstrate that equivalent protection is provided, the employer must demonstrate full compliance with all tagout-related provisions, including the additional tagout training requirements, and implement ''additional elements as are necessary to provide equivalent safety.'' This might include removing an isolating circuit element, blocking a

controlling switch, opening an extra disconnecting device, or removing a valve handle to reduce the potential for any inadvertent energization.

The standard requires that whenever major replacement, repair, renovation or modification of equipment is performed, and whenever new equipment is installed, the employer must ensure that energy-isolating devices are designed to accept locks. In the preamble to the general industry rule, OSHA explained that such modifications are most effectively and efficiently made as part of the normal equipment replacement or renovation cycle (54 FR 36656). (The proposed shipyard rule makes clear that this requirement would only apply to machines, equipment and systems the shipyard employer owns (proposed § 1915.89(b)(2)(iii)).

Requirements for lockout/tagout devices (protective materials and hardware) (§ 1910.147(c)(5), proposed § 1915.89(b)(5)). When attached to an energy-isolating device, both lockout and tagout devices are tools that the employer can use to help protect employees from hazardous energy. A ''lockout device,'' as defined in the standard, provides protection by holding the energy-isolating device in the safe position, thus preventing the equipment from becoming energized (§ 1910.147(b), proposed § 1915.95). The ''tagout device'' is a prominent warning device that provides protection by identifying the energy-isolating device as a source of potential danger. The tagout device indicates that the energy-isolating device and the equipment being controlled may not be operated until the tagout device is removed. Whichever device is used, the standard requires that it must be provided by the employer, be singularly identified, be the only device used for controlling hazardous energy and not be used for other purposes. Locks and tags must also meet the following requirements:

- *Durable*—Lockout and tagout devices must be able to withstand the environment to which they are exposed for the maximum duration of the expected exposure. Tagout devices, including tags, must be constructed and printed so that they do not deteriorate or become illegible in wet or damp environments, or when used in environments where corrosives (e.g., acid and alkali chemicals) are used or stored;
- *Standardized*—Both lockout and tagout devices must be standardized according to color, shape, or size so they are readily recognized and associated with the control of hazardous energy. Tagout devices must also be standardized according to print and format;
- *Substantial*—Lockout and tagout devices must be substantial enough to prevent inadvertent or accidental removal. Locks must be substantial enough to prevent removal except by excessive force or by special tools such as bolt cutters or other metal cutting tools. The device for attaching the tag must be non-reusable, attachable by hand, self-locking and non-releasable. It must also have a minimum unlocking strength of no less than 50 pounds and have general design and basic characteristics equivalent to a one-piece nylon cable tie that will withstand all environments; and
- *Identifiable*—Locks and tags must clearly identify the employee who applies them. Tags must also warn against hazardous conditions if the machine or equipment is energized and must include a legend such as the following: DO NOT START; DO NOT OPEN; DO NOT CLOSE; DO NOT ENERGIZE; DO NOT OPERATE.

Periodic inspections (§ 1910.147(c)(6), proposed § 1915.89(b)(6)). The standard requires that the employer perform periodic inspections at least annually to ensure that energy control procedures are working properly. The inspection must be able to determine four things: (1) Whether the steps in the energy control procedures are being followed, (2) whether the employees involved know their responsibilities under the procedures, (3) whether the procedures are adequate to provide the necessary protection, and (4) what changes, if any, are needed to correct identified deficiencies (54 FR 36673). The inspection must be performed by an authorized employee, other than the employee utilizing the energy control procedures being inspected.

The periodic inspection must contain two components: an inspection of each energy control procedure and a review of each employee's responsibilities under the energy control procedure being inspected. Where a tagout system is used, the inspector's review of employee responsibilities also extends to affected employees because of the increased importance of their role in avoiding accidental or inadvertent energization (54 FR 36673). In addition, when a tagout system is used, the inspection must include a review with authorized and affected employees about the limitations of tags.

The standard requires that each energy control procedure must be separately inspected. However, that does not mean the employer must inspect each piece of equipment under the same energy control procedure or observe each employee the procedure covers. The employer may inspect a representative sample of the equipment the procedure covers and authorized employees who implement the procedure on that equipment. Equipment that has the same type and magnitude of hazardous energy and has the same or similar type of controls may be grouped together and inspected by the type of procedure (Ex. 2–26, Letter to Thomas J. Civic, 3/9/2004). Moreover, a grouping of detailed individual procedures would be considered a single procedure for the purposes of periodic inspection, provided all of the procedures have the same or similar:

- Intended equipment use;
- Procedural steps for applying controls (i.e., shut down, isolation, blocking, and securing equipment);
- Procedural steps for placement, removal and transfer of lockout/tagout devices and responsibility for them; and
- Requirements for testing to verify the effectiveness of lockout/tagout devices and other control measures (Ex. 2–25 Letter to Lawrence P. Halprin, 9/19/1995).

In 1993, prior to the Agency interpretations, SESAC raised similar concerns about the percentage of equipment that employers must inspect in order to determine whether the energy control procedures are working properly and employees understand their responsibilities under the procedures (Docket SESAC 1993–3, Ex. 104X, pp. 164–169). OSHA believes the interpretations incorporated and discussed above address SESAC's concerns.

Employee training (§ 1910.147(c)(7), proposed § 1915.89(b)(7)). The standard requires that the employer provide effective initial training as well as retraining as necessary to ensure that employees understand the purpose and function of the energy control program and acquire the knowledge and skills necessary for the safe application, use and removal of the energy controls. The details of the training (e.g., amount and type of training) may vary depending on factors such as the employee's job duties under the energy control program and the complexity of the equipment or lockout/tagout procedures (54 FR 36673). The relative degree of knowledge that authorized, affected and other employees must acquire also varies, with authorized employees demanding the most extensive training because of their responsibility for implementing energy control procedures (i.e., applying lockout and tagout devices) and performing servicing operations. For example, the

training for authorized employees must cover at least:

- Recognition of applicable hazardous energy sources;
- The type and magnitude of the energy available in the workplace; and
- The means and methods necessary for energy isolation and control.

Affected employees, because they operate or use the equipment that authorized employees are servicing, must be trained in the purpose and use of the energy control procedures. Finally, other employees who may work or be in an area where energy control procedures are in use need to be instructed about the procedure in use and, most importantly, about the prohibition against attempting to start or energize machines or equipment that are locked out or tagged out.

As mentioned, when a tagout system is used the standard requires that employers also train employees in the limitations of tags, including at least:

- Tags are essentially warning devices affixed to energy isolating devices and do not provide the physical restraint of a lock;
- When a tag is attached to an energy isolating device, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored or otherwise defeated;
- To be effective, tags must be legible and understandable by all authorized employees, affected employees and all other employees whose work operations are or may be in the area;
- Tags and their means of attachment must be made of materials that will withstand the environmental conditions encountered in the workplace;
- Tags may evoke a false sense of security. They are only one part of an overall energy control program; and
- Tags must be securely attached to an energy isolating device so they cannot be inadvertently or accidentally detached during use.

The standard also requires the employer to provide retraining to authorized and affected employees when the energy control procedures are changed, when a change in job assignment occurs or when a change in equipment presents a new hazard. Additional retraining must also be provided when an inspection reveals or the employer has reason to believe that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures. Finally, the retraining must reestablish employee proficiency and describe any new or revised control methods and procedures, if needed. The standard requires that employers certify that training and retraining has been provided and is current.

Application of controls (§ 1910.147(d), proposed § 1915.89(c)). The standard establishes procedures that authorized employees must follow for applying energy controls. The energy control procedures must include the following elements implemented in this sequence:

(1) Prepare for shutdown, ensuring authorized employee has knowledge in the type and magnitude of the energy, the hazards to be controlled and the methods to control energy;

(2) Shut down the equipment using the procedures established for that equipment;

(3) Isolate the equipment from the energy sources;

(4) Apply lockout or tagout devices to energy isolating device in a manner that holds the energy isolating devices in a safe or off (lockout) position or indicates that operation or movement of the energy isolating device is prohibited (tagout). Where a tag cannot be affixed directly to the energy isolating device, the standard requires that it must be placed as close as safely possible to the device, and in a position that will be immediately obvious to anyone attempting to operate the device or equipment;

(5) Relieve or render safe all stored or residual energy. If there is a possibility of stored or residual energy reaccumulating, the verification of isolation must be continued until the servicing is completed or the risk no longer exists; and

(6) Verify isolation and deenergization of equipment before beginning servicing.

The standard requires that applying energy controls be performed only by the authorized employee performing the servicing and only after affected employees are notified that energy controls are being applied (or being removed) (§ 1910.147(c)(8) and (9), proposed § 1915.89(b)(8) and (9)).

Release from lockout or tagout (§ 1910.147(e), proposed § 1915(d)). The standard also establishes procedures that authorized employees must follow when releasing lockout and tagout applications. Before lockout or tagout devices are removed (i.e., the equipment is being released from the lockout or tagout status) and energy is restored to the equipment, the authorized employee must take the following actions in this sequence:

(1) Inspect the work area to ensure that non-essential items have been removed and that equipment components are intact and capable of operating properly;

(2) Check the work area to ensure that all employees have been safely positioned or removed;

(3) Notify affected employees after removing locks or tags and before starting equipment; and

(4) Make sure that locks and tags are removed only by the authorized employees who attached them. In the very few instances when this is not possible, the device may be removed by another employee who is also an authorized employee and is working at the direction of the employer, provided that the employer has:

- Implemented specific procedures and training that address the situation; and
- Demonstrated that the procedures provide equivalent safety.

Furthermore, the procedure must include the following:

- A verification that the employee who applied the lockout/tagout device is not at the facility;
- Reasonable efforts have been made to contact the authorized employee to inform him or her that the device has been removed; and
- Assurance that the absent authorized employee knows about the removal before he or she returns and resumes work.

Additional safety requirements (§ 1910.147(f), proposed § 1915.89(e)). The standard includes additional requirements when certain circumstances may pose an increased risk of harm. These circumstances are: (1) Testing or positioning equipment during servicing; (2) the presence of outside (contractor) personnel at the worksite who are engaged in servicing operations; (3) servicing or maintenance performed by a group (rather than one specific person); and (4) changes in workshifts or personnel.

Testing or positioning of machines, equipment, systems or their components (§ 1910.147(f)(1), proposed § 1915(e)(1)). The standard allows the temporary removal of locks or tags and the re-energization of equipment during the limited time when power is needed for the testing or positioning of them or their components. The reenergization must be conducted in accordance with the sequence of steps listed below to ensure employees' safety when they take equipment from a deenergized to energized condition and back again:

(1) Clear the equipment of tools and materials;

(2) Remove employees from the equipment area;

(3) Remove the lockout or tagout devices in accordance with the required removal procedures;

(4) Energize the equipment and proceed with testing or positioning;

(5) When testing or positioning is complete, deenergize all systems and isolate the equipment from the energy source; and

(6) Reapply lockout or tagout devices in accordance with the required control application procedures.

Outside personnel (contractors, ship's crew, etc.) (§ 1910.147(f)(2), proposed § 1915(e)(2)). When outside personnel perform servicing operations at the worksite, the standard requires that the onsite employer and the outside employer must inform each other of their respective lockout or tagout procedures. The onsite employer must ensure that his or her personnel understand and comply with all restrictions and/or prohibitions of the outside employer's energy control program. The proposed rule makes it clear that outside personnel include ship's crew and contractors hired by the ship owner.

The following accident highlights the need for employers to coordinate their lockout/tagout program. In 1987, a fatality occurred aboard a grain-carrying ship that was equipped with wing tanks on each side of the ship. A screw conveyor ran through each wing tank. At the time of the accident, two of the wing tanks were being washed. Simultaneously, a Marine Chemist and a shipyard employee were inside another wing tank that was not being washed. The shipyard employee was standing on the conveyor when it was turned on by a member of the ship's crew who was unaware the employee and the chemist were inside the other wing tank. The screw conveyor crushed the shipyard employee to death. Although a lockout procedure was in effect for the employees washing the tanks, this information was not provided to the other employees, nor was there any coordination between employers or tasks.

Group lockout or tagout (§ 1910.147(f)(3), proposed § 1915(e)(3)). The standard requires that when servicing is performed by a crew or other group, the employer must utilize procedures that afford employees a level of protection equivalent to the use of a personal lockout or tagout device. The group lockout/tagout procedures must be in accord with the employer's energy control procedures, including at least the following specific requirements:

- Each group working under a group lockout/tagout must have an authorized employee who is vested with primary responsibility for the group;
- The authorized employee must ascertain the exposure status of each member of the group;
- Each authorized employee must affix a personal lockout or tagout device when he or she begins work and remove it when work is completed; and
- If more than one crew or group is involved in servicing, an authorized employee must be designated to coordinate the affected groups and ensure continuity of protection.

Shift or personnel changes (§ 1910.147(f)(4), proposed § 1915(e)(4)). The standard requires that the employer's energy control program include specific procedures to ensure the continuity of lockout or tagout protection during the workshift or personnel changes.

Appendix A (Non-mandatory). The standard also includes a non-mandatory appendix as a guideline to help employers and employees comply with the requirements of the standard. The appendix also provides other helpful information on the control of hazardous energy.

The differences between proposed § 1915.89 and § 1910.147. As mentioned, in most respects, OSHA is proposing to apply the general industry lockout/tagout standard to shipyards in the same manner as it applies to general industry. However, in certain places OSHA is proposing to modify the language of the standard to make the rule more directly applicable to shipyard employment. Most of the proposed modifications are strictly technical, for example, changes in the effective date and references to applicable standards in Part 1915. A few proposed changes address specific working conditions and circumstances in shipyards.

- *''Unexpected.''* The proposal does not include the term ''unexpected,'' which the general industry Lockout/Tagout standard uses in describing equipment energization and startup that the standard covers (§ 1910.147(a)(1)(i)). OSHA interpreted ''*unexpected* energization or startup'' to mean energization or startup of equipment that is unintended or unplanned. OSHA believes that energization or startup that occurs while the employee is servicing the equipment and before the employee intends to activate it is unintended and unplanned. This includes any steps toward reenergization that are taken without the servicing employee's knowledge. Such startup is clearly outside the energy control plan and procedures, and could result in injury if the energy involved is strong enough. Thus, determining whether employees could be injured if the equipment is energized or starts up during the servicing operation is a key inquiry for employers. Thus, OSHA believes preventing energization or startup during servicing that could cause injury is necessary to fully effectuate the standard's purpose and the provisions designed to protect employees from injury during servicing operations.

In *Reich* v. *General Motors Corp.*, the Commission and Court of Appeals for the Sixth Circuit did not accept OSHA's interpretation of ''unexpected'' energization or startup in the general industry Lockout/Tagout standard. *Reich* v. *General Motors Corp.*, 17 O.S.H. Cas. (BNA) 1673 (1995); 89 F.3d 313 (6th Cir. 1996). Although the Agency disagrees with their decisions in that case, to avoid any confusion OSHA is not using the term ''unexpected'' in this proposal. OSHA believes this change further clarifies the Agency's intent that the proposal covers all servicing activities in which the equipment being serviced could energize, start up or release energy while the employee is servicing it, and such action could cause injury.

Systems. OSHA proposes to add the word ''systems'' to the ''machines and equipment'' the general industry standard covers. The hazards on vessels often involve working on ship's systems that create and distribute power—not only the machines or equipment that are driven by it. There are several reasons for explicitly identifying systems in the application of the shipyard standard. First, the language of shipbuilding and repair revolves around systems. The functional components of a ship are commonly known as ship's systems, such as electrical, propulsion, guidance, fuel, or radar systems. Adding systems to the standard makes it more directly applicable to shipyard employment, and makes it clear that the standard applies to systems as a whole, not merely the individual components of such systems.

Second, including systems also makes it clear that pipes, electrical cables, and like components are included in the equipment and processes to which lockout/tagout must be applied, and that a holistic approach may be needed to ensure employees are protected. In some cases, pipes, power cables, and control systems need to be considered when working on a specific piece of equipment, and adding the systems term helps to ensure that holistic approach is followed.

Scope—exemptions. The shipyard lockout/tagout proposal (§ 1915.89(a)(1)) does not carry over the exemptions from coverage contained in the scope section of the general industry standard (§ 1910.147(a)(1)(ii)). The reasons are

obvious. The exemptions include the maritime industry or address hazards and activities that are not present in shipyard employment (e.g., agriculture, oil and gas well drilling and servicing). The proposal (§ 1915.80 and .89) makes clear that the entirety of subpart F applies to shipyard employment, including landside operations and work on board vessels and vessel sections.

The proposal also does not include the exemption that SESAC recommended:

Note: This standard does not apply on vessel sections, equipment, and machines which are under the control of a Federal government agency (e.g., the U.S. Navy), and where the agency exercises control over hazardous energy sources by its lockout or tagout procedures. Those procedures shall supersede these regulations (Docket SESAC 1993–3, Ex. 104X, p. 48).

It is unclear to whom SESAC intends that the proposed exemption would apply—the ship, Federal civilian employees, military personnel, shipyard owners or Federal contract employers and employees. At the outset, OSHA notes that its standards apply to employers and not vessels. Assuming, however, that SESAC intends the exemption to apply to shipyard owners and Federal contractors who perform servicing onboard government vessels, such an exemption is inconsistent with the OSH Act and case law interpreting it. The OSH Act does not exclude Federal contractors from coverage (29 U.S.C. 653(b)(2)). The case law is well-settled that employees of private contractors performing work under Federal contracts are covered under the OSH Act. *Ensign-Bickford Co.* v. *OSHRC*, 717 F.2d 1419, 1421, *cert. denied*, 466 U.S. 937 (1984). In addition, the provisions in 29 CFR part 1960 (Elements for Federal Employee Occupational Safety and Health Programs) stress that the OSH Act covers Federal contractors and their employees. In particular, § 1960.1(f) provides that Federal contract employees are assured protection under the OSH Act and no provision of part 1960 ''shall be construed in any manner to relieve any private employer, including Federal contractors, or their employees of any rights or responsibilities under the provisions of the Act.''

OSHA is preempted from covering Federal contractors and their employees only where another Federal agency has statutory authority to prescribe and enforce occupational safety and health standards on the contract employers and exercises that authority. *Ensign-*Bickford, 717 F.2d at 1421. A contractual obligation to comply with a Federal agency's safety procedures or manual does not constitute an exercise of statutory authority sufficient to justify preemption under section 4(b)(1) of the OSH Act (29 U.S.C. 653). *Id.* Preemption is appropriate only where a Federal agency implements and enforces the regulatory apparatus necessary to replace those safeguards the OSH Act requires. *Id.*

With regard to Federal civilian employees, the SESAC's proposed exemption also is inconsistent with the OSH Act, Executive Order (E.O.) 12196 and 28 CFR 1960. Those provisions, which require that each Federal agency provide safe and healthful places and conditions of employment for Federal employees, are meant to ensure that Federal civilian employees have the same protections as private sector employees have under the OSH Act (29 U.S.C. 668(a)(1); E.O. 12196 § 1–201 (1980); 29 CFR 1960.1(a)). To effectuate this, section 1–201(d) of Executive Order 12196 and 29 CFR 1960.16 require Federal agencies to comply with all standards issued under section 6 the OSH Act. There is no evidence in the record that the hazardous energy to which Federal civilian employees may be exposed during onboard servicing operations is any different from those that private sector employees face onboard vessels. Therefore, OSHA believes excluding Federal employees is not appropriate.

With regard to military personnel, OSHA notes that E.O. 12196 excludes from coverage ''military personnel and uniquely military equipment, systems, and operations'' (E.O. 12196 § 1–101). Accordingly, the exemption SESAC recommends is not necessary to exclude military personnel from the proposed lockout/tagout standard.

Scope—application and purpose. The general industry standard specifies that it does not apply to ''normal production operations,'' except in certain limited situations (§ 1910.147(a)(2)(ii)). The standard and its preamble explain that equipment hazards during those operations are covered by subpart O of Part 1910. The requirements of subpart O generally apply to shipyard employment. However, certain provisions are not applicable to shipyard employment because the specific requirements in subpart H of part 1915 apply (*e.g.*, §§ 1915.131 and .134). Accordingly, OSHA is proposing to revise the regulatory language to indicate that standards addressing normal production operations in shipyard employment are found in the applicable requirements contained in ''subpart O of 29 CFR part 1910 and subpart H of 29 CFR part 1915.''

Similarly, § 1910.147(a)(3)(ii) requires employers to use the general industry standard to supplement lockout/tagout provisions in other standards in part 1910. The proposed rule modifies this language to include part 1915 as well as part 1910. As mentioned, the part 1915 standards that contain lockout/tagout requirements include § 1915.162 Ship's Boilers, § 1915.163 Ship's Piping Systems, § 1915.164 Ship's Propulsion Machinery, and§ 1915.181 Electrical circuits and distribution boards. Part 1910 standards that currently contain lockout/tagout related requirements that may apply, with some exceptions, to shipyards include: § 1910.178 Power Industrial Trucks; § 1910.179 Overhead and Gantry Cranes; § 1910.181 Derricks; § 1910.213 Woodworking Machinery; § 1910.217 Mechanical Power Presses; § 1910.218 Forging Machines; § 1910.252 Welding, Cutting and Brazing; and § 1910.305 Electrical.

Definitions. The proposed standard uses the same definitions as paragraph (b) of § 1910.147. The proposed definitions contain some technical changes, primarily to make the definitions more directly applicable to shipyard employment. In addition, the lockout/tagout definitions have been moved to the definitions section for subpart F, (proposed § 1915.95). As a result, the paragraph numbers in the proposed § 1915.89 do not correspond with the numbers in the general industry standard.

Installing lockable energy-isolating devices during replacement and overhaul. Paragraph (c)(2)(iii) of the general industry standard requires employers to install lockable energy-isolating devices when replacing or overhauling machines or equipment. In the preamble to the final standard, OSHA said that it was ''much more effective and protective'' to design a locking capability into equipment during normal replacement and overhaul cycles (54 FR 36656). The proposed lockout/tagout standard for shipyards also contains this requirement (proposed § 1915.89(b)(2)(iii)). However, the general industry provision assumes that the employer owns, and therefore, has the ability to make changes to equipment. This frequently is not the case in shipyard employment, particularly with regard to ship's systems. As mentioned, shipyard employers ordinarily do not own the ships that they service. Accordingly, the Agency proposes to include the following exception to § 1915.89(b)(2)(iii): ''This requirement does not apply to a machine, equipment or system that the employer does not own.''

However, OSHA believes that shipyard employees, ship's crews, and contractor employees would be safer if vessel owners installed lockout systems, and some owners already are implementing this safety measure. For example, the Military Sealift Command (MSC) operates over 100 civilian-crewed ships providing ocean transportation of equipment, fuel, supplies, and ammunition to sustain U.S. military forces worldwide (Ex. 9). The MSC lockout/tagout program requires both a tag and a locking device with a padlock to secure an energy source whenever possible, which protects shipyard employees as well as ship's crews during lockout/tagout applications (Ex. 9). OSHA asks for comment on how the Agency or shipyards can encourage ship owners to install lockable systems during the design and overhaul process. Finally, the Agency is also proposing to change paragraph (b)(2)(iii) to reference the effective date of the revised 1915 subpart F.

Outside personnel (contractors, ship's crew, etc.) proposed § 1915.89(e)(2)). OSHA is requesting comment on what language to adopt in the final rule that best and most clearly explains the requirement to coordinate the activities of the various employers that might be involved in servicing operations at shipyards. The proposed language, which is consistent with the language of § 1910.147(f)(2) reads as follows:

(2) *Outside personnel (contractors, ship's crew, etc.).* (i) Whenever outside servicing personnel such as contractors or ship's crew are to be engaged in activities covered by the scope and application of this standard, the on-site employer and the outside employer shall inform each other of their respective lockout or tagout procedures.

(ii) The on-site employer shall ensure that his/her employees understand and comply with the restrictions and prohibitions of the outside employer's energy control program.

Several shipyard employment standards require employers to coordinate safety and health activities. For example, the part 1915 Subpart P Fire Protection in Shipyard Employment standards require contract employers in shipyard employment to have a fire safety plan that complies with the host employers fire safety plan (§ 1915.502(e)). In OSHA's experience, such coordination is commonly achieved by the contract employers adopting the safety and health policies and procedures of the shipyard. For example, as explained in the preamble to the fire protection rulemaking, OSHA finds it acceptable for a contractor to adopt the host employer's fire safety plan if that plan includes the fire hazards the contract employees will encounter (69 FR 55674, (9/15/2004)).

OSHA is concerned that the language of paragraph (ii) requiring the on-site employer to ensure that his/her employees understand and comply with the restrictions and prohibitions of the *outside* employer's energy control program may appear to run counter to the common practice of contractors following the host employer's programs. OSHA does not believe that this is actually the case, because contract employers who adopt the host employer's energy control procedures would implement the required coordination and both employers would be in compliance. However, to avoid potential confusion on this matter, OSHA is considering alternative language used in a similar requirement found in § 1910.269(d)(8)(iv) of the general industry electric power generation, transmission and distribution standard, which reads as follows:

Whenever outside servicing personnel are to be engaged in activities covered by paragraph (d) of this section, the on-site employer and the outside employer shall inform each other of their respective lockout or tagout procedures, and each employer shall ensure that his or her personnel understand and comply with restrictions and prohibitions of the energy control procedures being used.

OSHA requests comment on the best language to use for this provision. Is the alternative language easier to understand? Does it improve or alter employee protections? Does it provide more flexibility by allowing the employers to decide among themselves which procedures are more appropriate? Should the final standard require the employer to adopt the most protective procedures, regardless of which employer has them?

Issues for which OSHA is seeking comment on the lockout/tagout proposal. Although OSHA is proposing to adopt the § 1910.147 provisions with minor revision, the Agency is also considering whether to add additional measures to further tailor the standard to the shipyard industry and to provide additional protection for shipyard employees. Therefore, OSHA asks for comment on the following issues.

Current shipyard lockout/tagout programs. OSHA asks for information on current hazardous energy control programs used by shipyard employers and how they differ from OSHA's general industry approach. Please describe your lockout/tagout program and submit copies of your programs to the record. OSHA is also interested in learning about the effectiveness, costs, and cost savings associated with different hazardous energy approaches. Please submit any information on program effectiveness, injury reduction, costs, cost savings, and other benefits associated with your lockout/tagout efforts.

Compatibility of general industry approach for shipyard employment. At the beginning of the discussion of the proposed lockout/tagout standard, OSHA outlined the reasons why the Agency proposes to adopt the general industry lockout/tagout approach for shipyard employment. OSHA requests comment on the proposed approach. Specifically, OSHA requests comment on whether the proposed approach, as is, would adequately protect employees against hazardous energy in shipyard employment. Please explain what additional modifications to the standard, if any, may be needed to protect shipyard employees from hazardous energy. OSHA is aware that a number of shipyard employers have implemented lockout/tagout programs that are based on the general industry standard. Please describe your lockout/tagout program and submit a copy of it for the record. Why did your establishment implement the general industry approach? What type of revisions, if any, did you make to the general industry energy control program so it would be compatible and effective in your workplace?

Some members of SESAC urged that OSHA, instead of proposing to apply the general industry lockout/tagout standard to shipyards, to develop a different plain language lockout/tagout standard tailored specifically to shipyard employment. OSHA requests comment on whether a different standard, not based on the general industry standard, is necessary to control hazardous energy in shipyard employment. If not, why not? If so, what should such a standard contain? What types of problems and costs, if any, would adopting a separate shipyard lockout/tagout standard pose for shipyard employers who already have implemented a lockout/tagout program based on the general industry standard?

Incident investigation. SESAC recommended that a shipyard lockout/tagout standard include a provision requiring the employer to conduct incident investigations when accidents or near misses occur (Docket SESAC 1993–3, Ex. 8, p. 7). They recommended that incident investigations be conducted to identify deficiencies in the lockout/tagout program and then to correct any problems or deficiencies in the program. OSHA requests input on whether the standard should include an

incident investigation requirement. Does your shipyard or industry routinely conduct such investigations? If not, why not? If so, has the approach been successful in identifying and resolving lockout/tagout problems? If OSHA adopts an incident investigation provision, what requirements should it include (e.g., the qualifications of staff performing the investigation; the promptness of the investigation; the quality of the investigation, documentation, and corrective action)?

Additional measures. As discussed, the general industry standard only allows an employer to use a tagout device on a lockable energy isolating device when the employer can demonstrate that the tagout system will provide ''full employee protection,'' that is, when the employer demonstrates that the tagout program provides a level of safety equivalent to that obtained by using a lock. To demonstrate that the required level of protection is achieved the employer must demonstrate full compliance with all tagout provisions and implement additional safety measures as necessary. Some of the additional measures the standard identifies are removal of isolating circuit elements or valve handles and blocking control switches.

The general industry standard and this proposed rule do not apply the requirement of full employee protection and additional measures to energy isolating devices that are not capable of being locked. OSHA decided against extending the requirement to non-lockable energy isolating devices in the general industry rule because the Agency determined that such devices could not provide protection equivalent to that obtained by using a lock. In addition, OSHA observed that, in general industry, the number of non-lockable energy isolating devices was small, less than 10 percent of all equipment. Moreover, OSHA predicted that their number would rapidly decline and eventually disappear when the requirement to make energy isolating devices lockable during replacement or major repair was implemented.

Although the situation for shipyard landside operations is similar to that of general industry, the situation onboard vessels is almost the opposite. OSHA estimates that more than 90 percent of equipment and systems onboard vessels are not capable of being locked (see Preliminary Economic Analysis below). Some cannot be locked because the system is too complex or because locking the system would result in shutting down all operations throughout the vessel. In addition, a number of vessel systems are not designed or built to allow locks and shipyard employers cannot attach or retrofit them because they do not own the vessel. In recognition of this, OSHA is proposing to exempt shipyard employers from the requirement to make systems on vessels lockable during replacement and repair if the employer does not own the vessel. Therefore, for machines, equipment and systems onboard vessels, it is unlikely that the number of non-lockable systems will decrease significantly without action by ship owners. At the same time, OSHA is aware that many shipyard employers use additional measures whenever a tagout system is used, regardless of whether the energy isolating device is capable of being locked (Docket SESAC 1993–3, Ex. 104X, p. 73). OSHA requests comment on whether the standard should require shipyard employers to implement additional safety measures whenever a tagout system is used, regardless of whether the energy isolating device is capable of being locked. Does your establishment currently use additional safety measures whenever a tagout system is utilized? If not, why not? If so, what measures do you use and why?

A related issue is what additional measures employers may use when tagout systems are utilized. In addition to using the measures identified in the general industry standard, some shipyard employers use administrative means, such as posting authorized employees as attendants at the energy isolating device or power source to help ensure that no one removes the tagout device or starts up the equipment while servicing is still in progress. OSHA requests comment on whether the Agency should include posting of an attendant as an example of the additional measures employers may use. What additional measures does your shipyard and industry use to provide added protection when tagout systems are used? Please explain how these measures work and why they are used.

Group lockout/tagout. The general industry standard (§ 1910.147(f)(3)(iii)(D)) and the proposed standard require that the employer ensure that each authorized employee affix a personal lockout or tagout device to the group mechanism before beginning work and remove the device when work ends. This provision, along with others in the standard, ensures that each employee has a degree of control over his or her protection. SESAC recommended that a shipyard lockout/tagout standard include a provision allowing shipyard employers to use administrative or other means to control access to locked or tagged machines or equipment when a group of employees are servicing the same equipment (Docket SESAC 1993–3, Ex. 104X, pp. 134–158). OSHA requests comment on other ''equivalent methods'' for group lockout/tagout that the Agency should consider. What methods does your shipyard or industry use to control access in group lockout/tagout situations? Do they result in any other advantages or disadvantages?

It is OSHA's view that the group lockout/tagout provisions apply whether the employees in the group work for only one employer, or if they work for multiple employers. In your establishment or industry, are group lockout/tagout procedures used for multi-employer groups? If so, what safety measures do you use to assure that consistent procedures are used by the employers and employees involved?

Non-mandatory appendix. OSHA proposes to adopt the non-mandatory appendix from the general industry standard. The appendix, which provides an example of a typical minimum lockout procedure, will help shipyard employers comply with the standard. OSHA requests comment on whether the appendix should be revised to further tailor it to shipyard employers.

Section 1915.90 Safety Color Code for Marking Physical Hazards

OSHA proposes to incorporate by reference the general industry standard on safety color coding for marking physical hazards (§ 1910.144). The standard already is applicable to shipyard employment, both on vessels and on shore. The existing standard requires that the color red shall be the basic color for the identification of dangerous conditions such as containers of flammable liquids, lights at barricades and temporary obstructions and danger signs. The standard also specifies that red shall be the color for emergency stop buttons, electric switches, and machine stop bars. In addition, the standard requires that yellow shall be the basic color for designating caution and marking physical hazards such as slip, trip and fall hazards.

Section 1915.91 Accident Prevention Signs and Tags

OSHA is proposing to incorporate by reference the general industry Accident Prevention Signs and Tags standard (1910.145). The standard's requirements on the classification, design and wording of accident prevention *signs* apply to shipyard employment (on vessels and on shore)(§ 1910.145(a) through (e)); however, the standard's requirements on accident prevention *tags* do not (§ 1910.145(f)(ii)). Part 1915

does not have comprehensive, uniform requirements on the design, application and use of such tags. Part 1915 contains only limited requirements for accident signs and labels, such as provisions on the posting of warning signs and labels to comply with the shipyard confined and enclosed spaces standard (§ 1915.16).

The general industry provisions on accident prevention tags require that they be used where employees are exposed to potentially hazardous conditions, equipment or operations that are ''out of the ordinary, unexpected or not readily apparent'' (§ 1910.145(f)(3)). The provisions also require that tags meet uniform criteria for message, legibility, positioning/affixing, and comprehensibility (§ 1910.145(f)(4)).

Incorporating the general industry standard is necessary to provide consistent protection wherever shipyard employees are exposed to potentially hazardous conditions. It also ensures that important warning and danger signs and tags are uniform in their design and use, which OSHA believes will increase their effectiveness. The proposed requirements should not pose problems for shipyard employers since the general industry requirements are universally recognized and the use of signs and tags as specified in § 1910.145 are already common shipyard practice.

To eliminate any possible confusion, the proposal also amends § 1910.145 to remove from the scope provisions the exclusions for ''marine regulations'' and ''maritime'' (§ 1910.145(a)(1) and (f)(1)(ii)). As discussed in the proposed lockout/tagout section, a potential for confusion may exist because the terms ''maritime'' and ''marine'' have sometimes been used as shorthand for shipyard employment, marine terminals and longshoring. Removing those terms eliminates that potential ambiguity. (OSHA notes that removing the terms does not change the scope and application of § 1910.145 vis a vis marine terminals and longshoring; that is, removing the language excluding maritime and marine regulations does not now make the standard applicable to marine terminals and longshoring. General industry standards apply to marine terminals and longshoring only to the extent they are specifically incorporated by reference in parts 1917 and 1918. Section 1910.145 is not incorporated into either part; therefore, it does not apply.)

OSHA requests comment on the proposed requirements. Should OSHA propose that accident prevention signs be understandable to employees (existing paragraph 1910.145(f)(4)(iv)) and that employees be provided with information as to their meaning (existing paragraph 1910.145(f)(5)(v)) as already required for accident prevention tags? (Section 1915.16 contains similar requirements, but they are for warning signs and labels for confined and enclosed spaces.) If not, why not? If so, what should those requirements include?

Section 1915.92 Retention of DOT Markings, Placards, and Labels

OSHA proposes to retain, with minor editorial changes, the existing requirements (§ 1915.100) on the retention of DOT markings, placards and labels on hazardous materials the shipyard receives. Proposed paragraphs (a) and (b) require that employers not remove labels and markings on any hazardous materials or freight containers, rail freight cars, motor vehicles, or transportation vehicles that the U.S. Department of Transportation regulations require to be marked until the hazardous materials are removed, and that any residue is cleaned and any vapors are purged to prevent potential hazards. This would apply regardless of how the shipyard receives the hazardous material packages (e.g., single packages, in bulk).

Proposed paragraph (c) requires that the markings, placards and labels on the hazardous materials be maintained so that they are ''readily visible.'' Proposed paragraph (d) states that employers are considered in compliance with this section if the markings/labels on non-bulk packages that will not be reshipped are affixed in accordance with the Hazard Communication standard § 1915.1200. Finally, proposed paragraph (e) specifies that the definition of ''hazardous materials'' and other undefined terms have the same definition as the U.S. Department of Transportation Hazardous Materials Regulations (49 CFR parts 171 through 180). OSHA requests comment on whether paragraph (e), which cross-references the DOT hazardous materials regulations (as does the general industry standard), is necessary for employers to understand the standard or whether it should be deleted in the final rule.

Section 1915.93 Motor Vehicle Safety Equipment, Operation, and Maintenance

OSHA proposes to add a new section addressing the hazards associated with the use of motor vehicles at shipyards. The proposed section sets forth requirements addressing motor vehicle safety equipment and the safe operation and maintenance of motor vehicles. According to the BLS CFOI database, over an 11-year period (1993–2003), 27 shipyard employees were killed in transportation accidents, accounting for 17 percent of the deaths during that time. OSHA believes that the proposed motor vehicle safety provisions will help reduce the incidence of motor vehicle related fatalities.

In § 1915.95, OSHA is proposing to define ''motor vehicle'' to mean any motor-driven vehicle operated by an employee that is used to transport employees, materials, or property. Motor vehicles would include passenger cars, light trucks (e.g., pickup trucks), vans, all-terrain vehicles, powered industrial trucks, and other similar vehicles.

OSHA believes the proposed requirements are necessary because vehicle accidents continue to result in employee deaths in shipyard employment. As discussed above, a high proportion of shipyard employee fatalities are caused by motor vehicle-related accidents. Motor vehicle accidents are also a significant cause of employee injury in shipyards. According to BLS, since 1998 an estimated 225 shipyard employees have suffered motor vehicle-related injuries serious enough to involve days away from work. In 2002, 63 shipyard employees suffered injuries involving days away from work in transportation accidents.

Paragraph (a)—Application. In paragraph (a)(1), OSHA proposes to apply this section to any motor vehicle used to transport employees, materials or property at shipyards. The provision also makes clear that the section would not apply to motor vehicle operation on public streets and highways. OSHA believes that Federal, State and local laws and regulations such as safety belt and vehicle inspection laws, already provide adequate protection on public roads. Thus, the proposal is directed to where those laws and regulations may not apply to motor vehicles used on shipyard property (e.g., transporting employees between worksites, moving materials). Nonetheless, OSHA believes the proposal's benefits will extend beyond motor vehicle operation at shipyard worksites. For example, an employee who is required to wear a safety belt while riding in a motor vehicle on shipyard property is more likely to continue to wear it when the vehicle leaves the shipyard. Likewise, a motor vehicle that is maintained in safe operating condition for use in shipyard employment will also be safe when it is used on public roads.

In paragraph (a)(2), OSHA proposes to limit application of most of the provisions of the section to motor

vehicles the employer provides. However, because some employers allow employees to use their own motor vehicles to transport themselves, other employees and materials within the shipyard, OSHA proposes that three provisions in this section also would apply to motor vehicles provided by employees. Those provisions are the requirements that employees use safety belts (§ 1915.93(b)(2)), that motor vehicles have seats for each employee being transported (§ 1915.93(b)(4)), and that tools and materials transported by motor vehicles be firmly secured (§ 1915.93(c)(2)).

Proposed paragraph (a)(3) states that only motor vehicle safety equipment requirements in paragraph (b)(1) through (b)(3) would apply to the operation of powered industrial trucks in shipyards. The seating requirements in paragraph (b)(4) would not apply to powered industrial trucks manufactured for operation in a standing position, because they are not equipped with seats. In addition, the Power Industrial Trucks standard prohibits unauthorized personnel from riding on powered industrial trucks and requires that a safe place to ride be provided where riding is allowed (§ 1910.178(m)(3)).

Proposed paragraph (a)(3) also provides that the motor vehicle operation and maintenance requirements in this section would not apply to powered industrial trucks. Proposed paragraph (a)(3) makes clear that employers must continue to comply with the maintenance, inspection, operation, and training requirements for powered industrial trucks in § 1910.178. Those requirements are more comprehensive and provide more specific protection than the more general motor vehicle operation and maintenance requirements proposed here.

Paragraph (b)—Motor vehicle safety equipment—Paragraph (b) proposes requirements for equipping motor vehicles with safety equipment and using it while motor vehicles are operated.

OSHA proposes in paragraph (b)(1) to require that each motor vehicle the employer acquires or puts in service for the first time after the final rule becomes effective be equipped with safety belts for each employee operating or riding in the vehicle. The Agency believes this requirement is necessary and appropriate because, as mentioned above, shipyard employees have been injured and killed in motor vehicle-related accidents, and it is well documented that safety belts reduce the risk of injury and death (Exs. 2–2; 2–4, p. 61: 2–5, p. 6; 2–6; 2–7; 2–8; 2–11; 2–18). There have been injuries and fatalities in shipyard employment, as well as other industries, directly related to employees not using safety belts, including while operating powered industrial trucks (e.g., forklifts) and other off-road vehicles (Ex. 2–9). Recognition of the hazard of operating motor vehicles without safety belts is also evidenced by the national consensus standards that require motor vehicles to be equipped with operator restraints and specify that operators and passengers use them (Ex. 3–13, SAE J386, Operator Restraint Systems for Off-Road Work Machines, November 1997; Ex. 3–10, ANSI/ASME B56.1–2000 Safety Standard for Low Lift and High Lift Trucks). The proposal would make subpart F consistent with those standards.

OSHA is aware that the powered industrial truck standard (§ 1910.178) does not require those motor vehicles to be equipped with safety belts. Much of the standard was promulgated pursuant to section 6(a) and was taken from the ANSI standard on low lift and high lift trucks that was in effect at the time, ANSI B56.1–1969. The 1969 ANSI standard did not have a safety belt requirement. However, when the ANSI standard was revised in 1993, provisions were added requiring that powered industrial trucks manufactured after 1992 be equipped with safety belts and requiring that operators use them. The current ANSI/ASME standard continues to require this. In issuing its 5(a)(1) enforcement policy regarding operator restraint systems for powered industrial trucks, OSHA said that the provisions in the revised national consensus standard evidence ''recognition of the hazard of powered industrial truck tipover and the need for the use of an operator restraint system'' (Ex. 2–15, Memorandum dated October 9, 1996, to Regional Administrators from John Miles).

Proposed paragraph (b)(1) would not require employers to retrofit those motor vehicles that they are already using with safety belts. OSHA is proposing to limit application of the requirement to motor vehicles put into service by the employer for the first time after the final rule becomes effective. Although OSHA anticipates that the vast majority of motor vehicles shipyard employers put into service after the effective date will be new vehicles that have been manufactured with safety belts, the proposed language also addresses used motor vehicles employers acquire and use for the first time after the final rule becomes effective. Applying the standard to both groups of motor vehicles would ensure that employers consider the safety of employees whenever they acquire motor vehicles. The proposal includes an exception to the safety belt requirement for those motor vehicles that were not originally manufactured with them (e.g., buses). However, if the motor vehicle was manufactured with safety belts and they have been removed or are not operational, the employer would have to ensure the motor vehicle has operational safety belts before it is used for the first time in the shipyard.

Proposed paragraph (b)(2) requires the employer to ensure that employees use safety belts at all times while operating or riding in a motor vehicle. As mentioned, motor vehicle accidents are a significant cause of employee injury and death and safety belts have been shown to reduce that risk. OSHA notes that the proposed requirement applies to all motor vehicles used at shipyards including powered industrial trucks. Forklifts are particularly susceptible to tipovers if they run over uneven ground, potholes, sand, or railways; turn corners sharply; or if the mast strikes an object. These situations and conditions are often found in shipyards. In many forklift tipover accidents, operators have been injured or killed because they were thrown from the forklift, or struck or crushed by the forklift when they tried to jump free. In 2001, BLS reported that across private industry 35 of 123 forklift fatalities (28 percent) involved tipovers or falling from a moving forklift. In contrast, where forklift operators were wearing safety belts in many cases the injuries were more limited. In one tipping accident, where an OSHA inspector noted that the operator was wearing a safety belt, the injuries were limited to four fingers on one hand.

OSHA is aware of concerns that some forklift operators have about using operator restraints near water. The Agency has heard some operators say they do not wear safety belts because they need to be able to jump free of the forklift if it goes off the dock. However, OSHA is not aware of any reports of powered industrial trucks running off a shipyard dock. OSHA requests comment, especially any data and other information on this issue.

OSHA is also aware of arguments that the safety belt provision is unnecessary since states have mandatory seat belt laws. However, those laws only apply to motor vehicles operated on public streets and highways and do not apply to off-road industrial vehicles such as powered industrial trucks. As mentioned, shipyard employees have been injured and killed in off-road motor vehicle accidents, which may have been prevented if they had been

using safety belts. OSHA believes that where employers inform employees about the safety belt requirement and require their use that safety belt usage will be significantly higher.

Proposed paragraph (b)(2) also requires that the employer ensure that employees wear safety belts securely and tightly at all times they are operating or riding in a motor vehicle. OSHA believes this language is necessary because the safety belt or operator restraint system may not restrain the employee within the vehicle compartment in the event of an accident or tipover if the belt is not fastened tightly.

As mentioned above, the safety belt requirement would apply to both employer and employee provided motor vehicles used to transport employees, materials and equipment on shipyard property. The risk of injury exists regardless of whether employees are operating or riding in employer or employee provided motor vehicles. Applying the proposed provision to employee provided motor vehicles will ensure that employees riding in those vehicles will have the same protections as those riding in employer provided motor vehicles.

Proposed paragraph (b)(3) would require that employers ensure that motor vehicle safety equipment is not removed from employer provided vehicles and replace equipment that is removed. For purposes of this paragraph, motor vehicle safety equipment includes items such as safety belts, airbags, lights, brakes, mirrors, horns, windshields and windshield wipers. This provision must be read in conjunction with proposed paragraph (c)(1) requiring that employers equip motor vehicles with safety equipment that is in serviceable and safe operating condition.

Proposed paragraph (b)(4) requires that motor vehicles used to transport employees have a firmly secured seat for each employee being transported. It also requires the employer to ensure that employees use the seat when they are being transported. This requirement is necessary because some shipyards transport employees from one worksite to another in the back of pickup trucks that do not have seats, and these employees are at risk of injury from falling out of or being thrown from the vehicle when traveling in the back of pickup trucks, even at low speeds. In 2001, for instance, a construction employee riding in the back of a pick-up while placing cones on a highway fell out and was killed even though the truck was traveling only 10 to 15 mph, which is the speed limit in most shipyards.

To address this hazard, it is OSHA's intent that employees have a safe seat to sit in when they are transported in shipyards, and that they use those seats to ride from one location to another. OSHA is not requiring that employers retrofit their motor vehicles with seats. Rather, employers need to ensure that transportation used to move employees throughout the shipyard has seats for every employee transported. OSHA believes the provision should not pose a problem for employers since many shipyard employers already use vans, small buses, and automobiles to transport employees.

As mentioned, OSHA also proposes to apply this provision to employee provided motor vehicles. This will ensure that every vehicle transporting employees in shipyards provides the same protection. OSHA notes that this provision would not apply to powered industrial trucks manufactured for operation in a standing position and do not have operator seats.

The Agency seeks comments on this proposed requirement. In your establishment and industry, how are employees transported from one worksite to another and what measures are in place to ensure that they are safely transported?

Paragraph (c) Motor vehicle maintenance and operation—Paragraph (c) proposes new requirements for the maintenance and operation of motor vehicles used in shipyards.

Proposed paragraph (c)(1) requires that employers ensure that each vehicle is maintained in a ''serviceable and safe operating condition.'' Safe operating condition refers to the condition of equipment that directly affects the safe operation of the vehicle. For example, the proposal would require that motor vehicle safety equipment such as visibility and warning devices, headlights, taillights, horns, windshield wipers, defogging or defrosting devices and safety belts be in safe working order. In § 1915.95, OSHA proposes to define ''serviceable condition'' to mean the state or ability of a vehicle to operate as it was intended by the manufacturer to operate. Accordingly, motor vehicles that are operated in accordance with manufacturer's instructions and recommendations would be considered in compliance with this provision.

Proposed paragraph (c)(1) would also require that motor vehicles be removed from service if they are not in serviceable and safe operating condition. It is OSHA's intent that the motor vehicle could not be used for shipyard employment until the problem or damage is repaired.

Proposed paragraph (c)(2) would require that tools or equipment be secured while being transported to prevent unsafe movement. This will reduce the risk of injury due to heavy or sharp tools or equipment sliding into or hitting operators or passengers. This provision does not require that all materials be secured, only those that may pose a hazard to employees. Items that do not pose a hazard to the driver or passengers could be transported in the vehicle cab or back of a pickup truck without being secured. As mentioned, this requirement would also apply to employee provided motor vehicles used at shipyards.

In paragraph (c)(3), OSHA proposes to address motor vehicle problems associated with the intermingling of pedestrian, bicycle and motor vehicle traffic in shipyards. When pedestrians, bicyclists and motor vehicles share shipyard roadways there is potential for accidents. Often accidents occur because the motor vehicle operator does not see the pedestrian or bicyclist in time to avoid hitting them. Due to the size of many shipyards, roads may be narrow or unmarked, and parking space may be limited. As a result, many employers provide bicycles or allow employees to use their own to get from one location to another. As the use of bicycles has grown, so too have the reports of accidents. For example, an employee riding a bicycle to perform regularly assigned work tasks in a Mississippi shipyard was killed when he collided with a motor vehicle (Ex. 2–1). It is OSHA's intention to ensure that employees riding bicycles and walking can be seen by motor vehicle operators and protected from injury.

Paragraph (c)(3) would require that employers implement measures to ensure motor vehicle operators can see and avoid hitting pedestrians and bicyclist traveling in shipyards. The proposal identifies some measures employers may implement. For example, the employer may establish dedicated travel lanes for pedestrians and bicyclists and install crosswalks and traffic control devices (e.g., stop signs, pavement markings) to control pedestrian and bicycle traffic across roadways. Using physical barriers to separate the travel lanes will also help to prevent injury. For travel lanes to be effective, the employer must ensure that the dedicated lanes are wide enough. For example, motor vehicle lanes need to be wide enough so they do not interfere with pedestrian/bicycle lanes and pedestrian/bicycle lanes need to be

wide enough for safe passage of both pedestrian and bicyclists.

The employer may also comply with the proposed provision by providing pedestrians and bicyclists with equipment such as reflective vests, reflectors or lights. OSHA believes this measure should not pose problems for employers since bicycles are manufactured with reflectors and lights. In addition, many shipyard employers already provide reflective vests so employees are visible to equipment operators.

The Agency seeks comment on the proposed provisions to reduce injuries related to the intermingling of pedestrian, bicycle and motor vehicle traffic in shipyards. OSHA also requests comments on the safe operation of motor vehicles. What does your company do to ensure that employees operate motor vehicles safely? Do you have requirements for employees driving in your facilities or using company vehicles?

Section 1915.94 Servicing Multi-Piece and Single Piece Rim Wheels

OSHA proposes to incorporate by reference the general industry standard (§ 1910.177) and non-mandatory appendices on servicing multi-piece and single piece rim wheels. The general industry standard currently exempts shipyard employment (§ 1910.177(a)(2)). (To avoid any confusion, OSHA also proposes to amend § 1910.177 to delete the exemption as it applies to shipyard employment.)

OSHA decided that this gap in coverage should be remedied by applying the general industry standard to shipyard employment after a preventable fatality was reported in 1999 at a special trade contractor site during rim servicing.

The general industry standard applies to servicing large vehicles such as trucks, tractors, trailers, buses and off-road machines, all of which are used in shipyard employment. The standard does not apply to servicing rim wheels on automobiles or on pickup trucks and vans using ''LT'' (light trucks) tires (1910.177(a)(1)).

The standard establishes requirements addressing four major areas: (1) Training for all tire servicing employees (§ 1910.177(c)); (2) the use of proper equipment such as clip-on chucks, restraining devices, or barriers to retain the wheel components in the event of an incident during the inflation of tires (§ 1910.177(d)); (3) the use of compatible components (§ 1910.177(e)); and (4) the use of safe operating procedures for servicing multi-piece and single-piece rim wheels (§ 1910.177(f) and (g)). The Agency believes that applying the general industry standard to shipyard employment should not pose a problem for employers because many shipyards that service the tires of their own vehicles are aware of and adhere to the safety provisions of § 1910.177.

OSHA requests comment on the proposed provision. To what extent do shipyards service multi-piece and single piece rim wheels? What safety precautions are followed to ensure employees are not injured during these tasks?

Section 1915.95 Definitions

In § 1915.95, OSHA proposes to add definitions for terms used in subpart F. The Agency believes that defining key terms in the regulatory text will make the standards easier to understand and to comply with. OSHA is not including a discussion of the terms that apply to the control of hazardous energy (lockout/tagout) in proposed § 1915.89. Most of those terms are discussed throughout the preamble section for § 1915.89 above. The terms are affected employee, authorized employee, capable of being locked out, energized, energy isolating device, energy source, hot tap, lockout, lockout device, normal production operations, servicing and/or maintenance, setting up, and ship's systems.

Hazardous or toxic substances. OSHA proposes to define hazardous or toxic substances to include any of the following: any material listed in the U.S. DOT Hazardous Materials Regulations (49 CFR part 172), any substance regulated by subpart Z of 29 CFR part 1910, any atmosphere with an oxygen content of less than 19.5%, or any corrosive substance or environmental contaminant that may expose employees to injury, illness or disease. Harmful environmental contaminants would include coliform and fecal matter.

Health care professional is proposed to mean a physician or any other health care provider whose legally permitted scope of practice allows the provider to independently provide or be delegated the responsibility to provide some or all of the advice or consultation this subpart requires. (See § 1915.87(b) for further discussion.)

Motor vehicle is proposed to mean any motor-driven vehicle operated by an employee that is used to transport employees, passengers, or property. For the purposes of this subpart, motor vehicles would include, but are not limited to, passenger cars, light trucks, vans, motorcycles, all terrain vehicles, powered industrial trucks, and other similar types of vehicles. The proposed definition excludes boats and vehicles operated exclusively on a rail(s).

Portable toilet facility is proposed to mean a non-sewered facility in which urine and defecation is collected and contained. Portable toilet facilities may be flushable, with water or another flushing agent. They also may be non-flushable, such as facilities that use chemicals or biological agents to treat waste. The proposed definition does not include privies, which are unlikely to be found in shipyards because many State and local regulations prohibit them near shorelines.

Potable water is proposed to mean water (1) approved for drinking by the State or local authority having jurisdiction, or (2) meeting the quality standards prescribed by the U.S. Environmental Protection Agency's National Primary Water Regulations (40 CFR part 141). Requiring that drinking water meet those requirements ensures that it will be free of environmental contaminants and toxic materials.

The proposed definition, for purposes of subpart F, updates the existing definition in § 1910.141(a)(2) to reflect that the EPA regulations have replaced the U.S. Public Health Service Drinking Water Standards. SESAC recommended that OSHA delete the reference to Federal drinking water regulations as a way to simplify the definition. However, OSHA believes that the reference needs to be retained to ensure that employee drinking water at least meets a uniform national quality baseline and that there will not be a gap in protection in areas where there may not be State or local drinking water regulations or jurisdiction. OSHA requests comment on whether the reference to Federal drinking water regulations should be retained.

Sanitation facilities is proposed to mean facilities provided for employee health and personal needs such as potable drinking water, toilet facilities, handwashing and drying facilities, showers (including quick drench/flush), changing rooms, eating and food preparation areas, first aid stations, on-site medical service areas and waste disposal. The proposed definition also includes supplies for sanitation facilities such as soap, toilet paper, towels, and drinking cups. OSHA notes that the proposed rule does not require employers to provide certain sanitation facilities such as on-site eating and drinking areas. However, where such facilities are provided they would have to meet the sanitation requirements OSHA proposes.

Serviceable condition means the state or ability of a tool, machine, vehicle, or other device to operate as it was

intended by the manufacturer to operate. For tools, machines and vehicles to be considered in serviceable condition, they must be maintained in good working condition. OSHA notes that if these devices are maintained and operated in accordance with manufacturer instructions and recommendations they would be considered to be in compliance with the requirement to be in serviceable condition.

Sewered toilet facility means a fixture maintained for the purpose of urination and defecation that is connected to a sewer, septic tank, holding tank (bilge), or on-site sewage disposal treatment facility and that is flushed with water. For purposes of this subpart, toilet facilities that are a permanent fixture onboard a vessel or vessel section would be considered to be sewered toilet facilities.

Vehicle safety equipment is proposed to mean those systems and devices installed on a motor vehicle for the purposes of effecting the safe operation of the vehicle such as safety belts, airbags, headlights, tail lights, emergency hazard lights, windshield wipers, brakes, horn, mirrors, windshields and other windows, and locks.

Vermin is proposed to mean any insects, birds, and other animals, such as rodents and feral cats, which may create safety and health hazards for employees.

Walking and working surfaces is proposed to mean any surface on or through which employees gain access to or perform job tasks. Walking and working surfaces also include any surface upon or through which employees are required or allowed to walk or work in the workplace. Walking and working surfaces include, but are not limited to, work areas, accessways, aisles, exits, gangways, ladders, passageways, stairs, steps, ramps, and walkways. This definition is drawn from the proposed rule for walking and working surfaces, subpart D of part 1910 (55 FR 13360 (04/10/1990)). OSHA believes that using this term in place of the list of specific working and walking areas will help to simplify subpart F.

Proposed Deletions

OSHA proposes not to include in revised subpart F the following provisions that are currently applicable to shipyard employment. The hazards and working conditions these provisions address are not present in the shipyard industry.

Section 1910.141(f)—OSHA is proposing not to retain the existing requirement to provide facilities to dry work clothing (i.e., protective clothing) before it is worn again. Information from site visits and industry meetings indicates that the provision may not be necessary because shipyards almost exclusively provide disposable protective clothing. OSHA requests comments or information about whether this provision is still needed in the shipyard industry.

Section 1910.141(h)—OSHA is proposing not to retain the existing requirements addressing food handling. OSHA believes that existing State and local health codes provide adequate protection for the hazards this section is intended to address. OSHA requests comment.

Section 1915.97(a)—OSHA is proposing not to retain the existing requirement on controls and personal protective equipment (PPE). This provision was adopted 30 years ago, prior to promulgation of standards addressing specific hazards and the PPE requirements in subpart I of part 1915. Those standards identify and require the controls and PPE this section addresses.

Section 1915.97(e)—OSHA is proposing to delete the existing prohibition that minors under 18 years of age not be employed in shipbreaking or related equipment. The prohibition is the only OSHA rule that regulates the working activities allowed for youth employees. States have numerous rules regulating work conditions for youth employees. At the Federal level, OSHA's sister agency in the Department of Labor, the Employment Standards Administration regulates youth working conditions under the authority of the Fair Labor Standards Act (FLSA). To protect young employees from hazardous employment, the FLSA provides for a minimum age of 18 years in occupations found and declared by the Secretary to be particularly hazardous or detrimental to the health or well-being of minors 16 and 17 years of age. The Secretary has issued 17 orders, published at 29 CFR part 570 subpart E, listing the occupations where persons less than 18 years of age are prohibited from working. Order 15 of the Part 570 subpart E prohibits minors from working in all occupations in wrecking, demolition, and shipbreaking operations, which are defined as ''all work, including clean-up and salvage work, performed at the site of the total or partial razing, demolishing, or dismantling of a building, bridge, steeple, tower, chimney, other structure, ship or other vessel'' (§ 570.66). OSHA believes that the § 1915.97(e) prohibitions are duplicative of the part 570 prohibitions, therefore, the Agency is proposing to delete the section.

OSHA asks for comment on the extent to which youth employees are employed in the shipyard industries, what occupations they work in, data on work-related injuries and illnesses occurring to youth employees, and whether the § 1915.97(e) prohibition is needed to protect youth employees.

V. Executive Summary of the Preliminary Economic and Initial Regulatory Flexibility Screening Analysis

Introduction. OSHA's Preliminary Economic and Regulatory Flexibility Screening Analysis (PEA) addresses issues related to the costs, benefits, technological feasibility, and economic feasibility (including small business impacts) of the Agency's proposed revision of 29 CFR 1915 subpart F on General Working Conditions in Shipyard Employment. This analysis also evaluates the non-regulatory alternatives to the proposal.

OSHA has determined that this proposal is not an economically significant regulatory action under E.O. 12866 and not a major rule under the Congressional Review provisions of the Small Business Regulatory Enforcement Fairness Act of 1996 (5 U.S.C. 609). As required by section 6(a)(3)(C) of E.O. 12866, OSHA has provided OMB's Office of Information and Regulatory Affairs with an assessment of the costs, benefits, and alternatives of this proposal, which are summarized below. E.O. 12866 requires regulatory agencies to conduct an economic analysis for rules that meet certain criteria. The most frequently used criterion under E.O. 12866 is that the rule will impose annual costs on the economy of $100 million or more. Neither the benefits nor the costs of this proposed rule exceed $100 million.

The Regulatory Flexibility Act of 1980 (RFA) (5 U.S.C. 601 *et seq.*), as amended in 1996, requires OSHA to determine whether the Agency's regulatory actions will have a significant impact on a substantial number of small entities. OSHA's Regulatory Flexibility Analysis indicates that the proposal will not have significant impacts on a substantial number of small entities. OSHA's PEA and Regulatory Flexibility Analysis include: A description of the industries potentially affected by the proposal; an evaluation of the risks the proposal addresses; an assessment of the benefits attributable to the proposal; a determination of the technological feasibility of the proposed requirements; an estimate of the costs employers would incur to comply with the proposal; a determination of the economic feasibility of compliance with

the proposal; and an analysis of the economic and other impacts associated with this rulemaking, including those on small businesses. The executive summary of the PEA is presented here and the full analysis has been placed in the rulemaking docket (Ex. 17).

OSHA's preliminary analysis estimates that the proposal will affect approximately 639 establishments and 86,764 employees in the shipyard employment industry. OSHA estimates that the proposal will prevent 1.1 deaths and 142.2 injuries and cost employers about $1 million per year to implement. The Agency estimates $7.1 million in monetized benefits from these prevented injuries. Following OMB guidelines to monetize all benefits, OSHA estimates the value of a statistical life of 1.1 prevented deaths at $8.3 million. Monetized benefits, therefore, would total $15.4 million annually.

Affected Establishments and Employees. The proposal will affect all establishments in shipyard employment, which consists of shipbuilding, shipbreaking, ship repair and related employment. For purposes of this analysis, OSHA incorporated the following three definitions of ''small firms'' and provided separate analyses for each: (1) Firms with fewer than 1,000 employees (the Small Business Administration (SBA) definition of small businesses in this sector); (2) firms with fewer than 250 employees (the definition of small business recommended by the Shipyard Fire Protection Negotiated Rulemaking Advisory Committee); and (3) firms with fewer than 20 employees. OSHA based its estimates of the number of firms, establishments, employment, and wages on BLS and U.S. Census Bureau data for North American Industrial Classification (NAIC) industry sector 336611. Also, OSHA used firm data from SBA in this analysis. Profit rates are based on data from the Internal Revenue Service's *2001 Corporation Source Book of Statistics of Income.* Table 6 shows the total number of establishments, number of firms, employment, revenues and payroll per establishment affected by the proposed rule. As the table shows, there are 614 firms with 639 establishments in the affected industry. The industry employs 86,764 employees, of whom 72 percent are estimated to be production employees.

TABLE 6.—INDUSTRIAL PROFILE FOR THE PROPOSED STANDARD

	Size class	Firms	Establishments	Employees	Production employees	Annual (1,000)	
						Payroll	Revenues
Shipyards	1,000 & Up	4	9	59,456	42,808	$2,402,689	$8,650,079
	500–999	7	12	9,075	6,534	310,743	1,191,169
	250–499	19	21	5,813	4,185	276,533	923,357
	100–249	43	49	5,813	4,189	305,522	925,760
	20–99	50	53	2,793	2,011	139,667	459,032
Off-Site	20–99	76	80	1,957	1,409	94,511	354,512
	1–19	415	415	1,852	1,333	98,717	310,665
Total		614	639	86,764	62,470	3,628,382	12,814,574

Source: Office of Regulatory Analysis.

Evaluation of Risk and Potential Benefits. OSHA's risk profile for exposure to the hazards the proposal addresses is based on data from the CFOI database and the BLS Survey of Occupational Injuries and Illnesses, as well as an analysis of OSHA fatality/catastrophe inspection data obtained from the Agency's IMIS database.

OSHA anticipates that the proposal will significantly reduce the number of shipyard accidents involving electrical contacts, being caught in machinery, and being struck by motor vehicles and their resulting injuries and fatalities. OSHA believes that the proposed requirements for controlling hazardous energy (i.e., energy control procedures, training, inspections) and motor vehicle safety will help to save lives and prevent injuries in the shipyard workforce. OSHA also believes that the new proposed CPR requirements for first aid providers will help to save lives and reduce the severity of injuries that do occur. OSHA estimates that compliance with the proposal would annually prevent 1.1 fatalities, 49.9 cases involving days away from work injuries, and 92.3 non-lost workday injuries, as stated in Chapter IV of the PEA Ex. 17.

In addition to saving lives and reducing injuries in shipyards, OSHA believes that compliance with the proposal would yield substantial cost savings to parties within and connected with the shipyard employment industry and ultimately to society as a whole. These monetized benefits take the form of willingness to pay estimates to avoid an injury or death. OSHA estimates monetized benefits of $7.1 million from the 142.2 avoided injuries from compliance with the proposal. When the monetized benefit of 1.1 avoided deaths ($8.3 million) is added, total annual monetized benefits equal $15.4 million.

Technological Feasibility and Compliance Costs (including Net Benefits). Consistent with the legal framework established by the OSH Act and court decisions, OSHA has determined that the proposal is technologically feasible. The proposal does not require any practices not already undertaken in many shipyards today. For example, a number of shipyard employers already are training their employees about the release of hazardous energy in servicing operations.

Annualized compliance cost estimates are annualized costs to employers using a 7 percent discount rate and a ten year life for one-time expenses. These proposed estimates are based on the employment and establishment counts in Chapter II (Industrial Profile) of the PEA, (Ex. 17) and the dollar costs needed to comply. These estimates also consider non-compliance rates to account for establishments that have already complied with the requirements.

To develop the proposed cost estimates, OSHA first examined the extent to which shipyard employers were already in compliance with existing and proposed OSHA requirements, with rules of other parties (such as the U.S. Navy in some shipyards), and with voluntary codes and best practices. Identifying provisions for which there is already substantial or full compliance, OSHA

arrived at a list of activities for which shipyard employers would incur costs, shown in Table 7. Table 7 presents the total annualized costs of the proposal, by major provision, which total $1,010,778. Most of the costs are associated with the requirements for controlling hazardous energy (Lockout/Tagout).

TABLE 7.—ESTIMATED TOTAL ANNUALIZED COMPLIANCE COSTS BY PROVISION

Requirement	Total annualized costs
Sanitation:	
Handwashing Facilities	$254,540
Medical Services and First Aid:	
CPR Training	136,442
Lockout/Tagout:	
Energy Control Program	107,857
Full Employee Protection	330,373
Protective Materials & Hardware	16,069
Training and Communication	132,622
Periodic Inspections & Certification	20,006
Subtotal	606,927
Vehicle Safety:	
Reinstalling Safety Equipment	12,762
Rim Wheel Training	107
Subtotal	12,869
Total	1,010,778

Source: Office of Regulatory Analysis, OSHA.

Net Benefits. For informational purposes, the Agency compared the estimated costs of compliance to the monetized benefits of the proposed standard. The Agency estimates monetized death benefits of $8.3 million dollars and monetized injury benefits of $7.1 million annually (see Chapter IV of the PEA). This yields total monetized benefits of $15.4 million annually. When the costs of compliance are compared to these estimates, the Agency concludes that the annualized net benefits of the proposed standard equal $14.4 million.

Economic Impacts. OSHA analyzed the impacts of these compliance costs on firms in the shipyard employment sector by comparing costs as a percentage of revenues and costs as a percentage of profits. These two measures (in percentages) correspond to two assumptions used by economists to set bounds for the range of possible impacts. One assumption is no-cost pass-through (i.e., that employers will be unable to pass any of the costs of compliance forward to their customers). This corresponds to compliance costs as a percentage of profits. The second assumption is full-cost pass-through (i.e., that employers will be able to pass all of the costs of compliance forward to their customers). This corresponds to compliance costs as a percentage of revenues. As summarized in Table 8, OSHA estimates that if affected establishments in the shipyard employment sector were forced to absorb these compliance costs entirely from profits (a highly unlikely scenario), profits would be reduced by an average of 0.14 percent. At the other extreme, if affected establishments were able to pass all of these compliance costs forward to their customers, OSHA projects that the price (revenue) increase required to pay for these costs would be less than 0.01 percent. Given the minimal potential impact on both prices and profits, OSHA concludes that the proposed regulation is economically feasible.

TABLE 8.—ECONOMIC IMPACTS

	Per establishment compliance cost	Compliance cost as a % of revenues	Compliance cost as a % of profits
Size Class:			
1–19	$56	0.01	0.20
1–250	422	0.01	0.16
1–1,000	749	0.01	0.20
All	1,582	0.01	0.14

Source: Office of Regulatory Analysis.

Regulatory Flexibility Screening Analysis. The RFA requires regulatory agencies to determine whether regulatory actions will adversely affect small entities. For employers in NAIC 336611, small firms are defined by SBA as those with less than 1,000 employees. As shown in Table 9, for firms with less than 1,000 employees, proposed costs are 0.20 percent of profits and 0.01 percent of revenues. OSHA also examined costs as a percentage of profits and revenues for firms with less than 250 employees, a definition of ''small entity'' recommended by the Shipyard Fire Protection Negotiated Rulemaking Advisory Committee and for firms with less than 20 employees to see whether there might be significant impacts on the very smallest firms. For firms with less than 250 employees,

proposed costs were 0.16 percent of profits and 0.01 percent of revenues. For firms with less than 20 employees, proposed costs were 0.20 percent of profits and 0.01 percent of revenues. The major source of the small variation in impacts is the low estimated compliance costs incurred by the small firms.

TABLE 9.—SMALL FIRM IMPACTS

	Per firm compliance cost	Compliance cost as a % of revenues	Compliance cost as a % of profits
Size Class:			
1–19	$59	0.01	0.20
1–250	432	0.01	0.16
1–1,000	768	0.01	0.20
All	1,645	0.01	0.14

Source: Office of Regulatory Analysis

OSHA has set the criteria that if costs exceed one percent of revenues or five percent of profits, then the impact on small entities is considered significant for purposes of complying with the RFA. For all of the classes of affected small firms in the shipyard employment industry, the costs of the proposal would be less than one percent of revenues and five percent of profits. OSHA therefore certifies that this proposal will not have an economically significant impact on a substantial number of small entities.

Non-Regulatory Alternatives. OSHA concludes that economic and social alternatives to a federal workplace standard fail to adequately protect employees in the shipyard employment industry from the hazards the proposal addresses. Tort liability laws and workers' compensation provide some protection, but institutional factors limit effective means of addressing the significant costs of occupational injuries and illnesses. Therefore, OSHA finds that this proposal will provide the necessary remedy.

VI. Environmental Assessment

The proposed standard has been reviewed in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 *et seq.*), the regulations of the Council on Environmental Quality (CEQ) (40 CFR part 1500), and DOL NEPA Procedures (29 CFR part 11). The provisions of the standard focus on the reduction and avoidance of accidents occurring in shipyard employment. Consequently, no major negative impact is foreseen on air, water or soil quality, plant or animal life, the use of land or other aspects of the environment.

VII. Federalism

OSHA has reviewed this proposed rule in accordance with E.O. 13132 (64 FR 43255 (8/10/1999)) regarding Federalism. This Order requires that agencies, to the extent possible, refrain from limiting State policy options, consult with States prior to taking any actions that would restrict State policy options, and take such actions only when there is clear constitutional authority and the presence of a problem of national scope. The Order provides for preemption of State law only if there is a clear constitutional authority and the presence of a problem of national scope. Additionally, the Order provides for preemption of State law only if there is a clear Congressional intent for the Agency to do so. Any such preemption is to be limited to the extent possible.

Section 18 of the OSH Act (29 U.S.C. 667) expresses Congress' clear intent to preempt State laws relating to issues on which Federal OSHA has promulgated occupational safety or health standards. Under the OSH Act, a State can avoid preemption on issues covered by Federal standards only if it submits, and obtains Federal approval of, a plan for the development of such standards and their enforcement. Occupational safety and health standards developed by such State Plan States must, among other things, be at least as effective in providing safe and healthful employment and places of employment as the Federal standards. Where such standards are applicable to products distributed or used in interstate commerce, they may not unduly burden commerce or must be justified by compelling local conditions (see section 18(c)(2)). The Federal standards on shipyard employment operations address hazards that are not unique to any one State or region of the country.

Subject to these requirements, States with occupational safety and health plans approved under section 18 of the OSH Act are free to develop and enforce under State law their own requirements for safety and health standards. A State Plan State can develop its own State standards to deal with any special problems that might be encountered in a particular State. Moreover, because this standard is written, to the extent possible, in general performance-oriented terms, there is considerable flexibility for State Plans to require, and for employers to use, methods of compliance which are appropriate to the working conditions covered by the standard. However, most shipyards even in State Plan States remain subject to Federal OSHA jurisdiction as only a few States (California, Minnesota, Vermont and Washington) have elected to cover shipyards and other maritime employment.

The Agency concludes that this proposed rule complies with E.O. 13132. In States without OSHA-approved State Plans, Congress expressly provides for OSHA standards to preempt State job safety and health rules in areas addressed by Agency standards; in these States, the proposed rule would limit State policy options in the same manner as every OSHA standard. In States with OSHA-approved State Plans, this action would not significantly limit State policy options; these States will be able to address any special conditions within the framework of the OSH Act while ensuring that their standards are at least as effective as the Federal standard. State comments are invited on this proposal and will be fully considered prior to promulgation of a final rule.

VIII. Unfunded Mandates

For the purposes of the Unfunded Mandates Reform Act of 1995 (2 U.S.C. 1501, *et seq.*), as well as E.O. 12875, this rule does not include any Federal mandate that may result in increased expenditures by State, local, and tribal governments, or increased expenditures by the private sector of more than $100 million.

IX. OMB Review Under the Paperwork Reduction Act of 1995

The proposed standard for General Working Conditions in Shipyard Employment contains collection-of-

information (paperwork) requirements that are subject to review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (PRA–95) (44 U.S.C. 3501 *et seq.*) and OMB regulations (5 CFR part 1320). The PRA–95 defines ''collection of information'' as ''the obtaining, causing to be obtained, soliciting, or requiring the disclosure to third parties or the public of facts or opinions by or for an agency regardless of form or format * * *'' (44 U.S.C. 3502(3)(A)).

The collection-of-information requirements identified in the NPRM have been submitted to OMB for review (44 U.S.C. 3507(d)). OSHA solicits comments on the collection-of-information requirements and the estimated burden hours associated with these collections including comment on the following:

- Whether the proposed collection-of-information requirements are necessary for the proper performance of the Agency's functions, including whether the information is useful;
- The accuracy of OSHA's estimate of the burden (time and costs) of the collection-of-information requirements, including the validity of the methodology and assumptions used;
- The quality, utility, and clarity of the information collected; and
- Ways to minimize the burden on employers who must comply, for example, by using automated or other technological information collection and transmission techniques.

The title, description of the need for and proposed use of the information, summary of the collections of information, description of respondents, and frequency of response of the information collection are described below, along with an estimate of the annual reporting burden and cost as required by 5 CFR 1320.5(a)(1)(iv) and 1320.8(d)(2).

Title: General Working Conditions in Shipyard Employment (29 CFR part 1915, subpart F).

Description and Proposed Use of the Collection-of-Information Requirements

OSHA is proposing to revise and update the existing standards in subpart F of 29 CFR part 1915 that address hazardous working conditions in shipyard employment. These standards cover many diverse working conditions in shipyard employment, including housekeeping, lighting, utilities, work in confined or isolated spaces, lifeboats, sanitation, and medical services and first aid.

OSHA also proposes to add new requirements to protect employees from hazardous working conditions that subpart F does not currently address. These proposed additions include the control of hazardous energy (lockout/tagout); motor vehicle safety equipment, operation and maintenance; accident prevention tags; and servicing multi-piece and single piece rim wheels.

OSHA adopted the existing subpart F standards in 1972 (37 FR 22458 (10/19/1972)) pursuant to section 6(a) of the Occupational Safety and Health Act of 1970 (OSH Act) (29 U.S.C. 651 *et seq.*). Section 6(a) permitted OSHA, within two years of the passage of the OSH Act, to adopt as an occupational safety or health standard any national consensus and established Federal standards (29 U.S.C. 655(a)). The provisions in subpart F were adopted from existing Federal regulations promulgated under Section 41 of the Longshore and Harbor Workers' Compensation Act (LHWCA) (33 U.S.C. 941), as well as national consensus standards.

OSHA believes the proposed revisions and additions to subpart F are necessary and reasonable to protect the safety and health of shipyard employees.

The following table identifies and describes the need for the new collection-of-information requirements contained in the proposed standard.

TABLE 10.—COLLECTION OF INFORMATION REQUIREMENTS CONTAINED IN THE PROPOSED STANDARD

Collection-of-Information Requirements Contained in the Proposed Standard
§ 1915.87(f)(3): The employer shall store stretchers in a clearly-marked location in a manner that prevents damage and protects them from environmental conditions. Marking the location of the stretchers ensures that they will be easily located in the event of an emergency.
§ 1915.89(b)(4)(i): *Energy control procedures.* (i) Procedures shall be developed, documented and utilized for the control of potentially hazardous energy when employees are engaged in the activities covered by this section. Employers use this information as the basis for effectively identifying operations and processes in the workplace that require energy control procedures; ensuring the safe application, use and removal of energy controls; and providing information and training to employees about the purpose and function of energy-control procedures. These procedures ensure that employees are protected while working on machines, equipment or systems that potentially contain hazardous energy.
§ 1915.89(b)(6)(i): The employer shall conduct a periodic inspection of each energy control procedure at least annually to ensure that the procedures and the requirements of this standard are being followed and to correct any deficiencies. This information will be used as a basis for employee retraining and to determine whether employers need to revise their energy control procedures.
§ 1915.89(b)(6)(ii): The employer shall certify that the periodic inspections have been performed. The certification shall identify the machine, equipment or system on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection and the person performing the inspection. Certifying the inspections assures that the employer has performed a periodic inspection.
§ 1915.89(b)(7)(iv): *Certification.* The employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training. Written certification assures the employer that employees receive the training specified by the Standard.
§ 1915.89(b)(9): *Notification of employees.* Affected employees shall be notified by the employer or authorized employee of the application and removal of lockout devices or tagout devices. Notification shall be given before the controls are applied, and after they are removed from the machine, equipment or system. § 1915.89(d)(2)(ii): After lockout or tagout devices have been removed and before a machine equipment or system is started, affected employees shall be notified that the lockout or tagout device(s) have been removed. OSHA is not taking a paperwork burden for this specification because it does not add burden to the notification requirement in paragraph (b)(9). § 1915.89(d)(3)(ii): *Lockout or tagout devices removal.* Each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device.

TABLE 10.—COLLECTION OF INFORMATION REQUIREMENTS CONTAINED IN THE PROPOSED STANDARD—Continued

Collection-of-Information Requirements Contained in the Proposed Standard
Exception to paragraph (d)(3): When the authorized employee who applied the lockout or tagout device is not available to remove it, that device may be removed under the direction of the employer, provided that specific procedures and training for such removal have been developed, documented and incorporated into the employer's energy control program. The employer shall demonstrate that the specific procedure provides equivalent safety to the removal of the device by the authorized employee who applied it. The specific procedures shall include at least the following elements: (ii) Making all reasonable efforts to contact the authorized employee to inform he or she that his or her lockout or tagout device has been removed; and (iii) Ensuring that the authorized employee has this knowledge before he/she resumes work at that facility. Such notification informs employees of the impending interruption of the normal production operations, and serves as a reminder of the restrictions imposed on them by the energy-control program. In addition, this requirement ensures that employees do not attempt to reactivate a machine or piece of equipment after an authorized employee isolates its energy source and renders it inoperative. Notifying employees after removing an energy-control device alerts them that the machines and equipment are no longer safe for servicing, maintenance, and repair.
§ 1915.89(e)(2)(i): *Outside personnel (contractors, ship's crew, etc.)* Whenever outside servicing personnel such as contractors or ship's crew are to be engaged in activities covered by the scope and application of this standard, the on-site employer and the outside employer shall inform each other of their respective lockout or tagout procedures. This provision ensures that each employer knows about the unique energy-control procedures used by the other employer preventing any misunderstanding regarding the implementation of lockout or tagout procedures.
§ 1915.94 Servicing multi-piece and single piece rim wheels. § 1910.177(d)(5): Current charts or rim manuals containing instructions for the type of wheels being serviced shall be available in the service area. Paragraph (d)(3)(iv) requires that when restraining devices and barriers are removed from service because they are defective, they shall not be returned to service until they are repaired and reinspected. If the repair is structural, the manufacturer or a Registered Professional Engineer must certify that the strength requirements specified in (d)(3)(i) of the Standard have been met. The certification records are used to assure that equipment has been repaired properly. The certification records also provide the most efficient means for OSHA compliance officers to determine that an employer is complying with the Standard.

OMB Control Number: 1218 0NEW.

Affected Public: Business or other for-profit.

Number of Respondents: 639.

Frequency: On occasion.

Average Time per response: Time per response ranges from 15 seconds for affected employees to be notified of the application and removal of lockout and tagout devices to 80 hours for large shipyards (shipyards employing more than 250 employees) to develop energy control procedures.

Estimated Total Burden hours: 10,491.

Estimated Costs (Operation and Maintenance): 0.

Interested parties who wish to comment on the collection-of-information requirements contained in this proposal must send their written comments regarding the burden hour and cost estimates or other aspects of the information collection request to the Office of Information and Regulatory Affairs, Attn: OMB Desk Officer for OSHA (RIN 1218–AB50), Office of Management and Budget, Room 10235, 725 17th Street, NW., Washington, DC 20503. The Agency also encourages commenters to submit their comments on these collection-of-information requirements to OSHA, along with their comments on the proposed rule. (See **ADDRESSES** section.). Persons are not required to respond to the collection of information unless it displays a valid OMB number.

To read or download the complete ICR, go to *http://www.regulations.gov* (Docket No. OSHA–S049–2006–0675) or *http://www.dockets.osha.gov* (Docket No. S–049). You also may obtain an electronic copy of the complete ICR at *http://www.reginfo.gov*. Click on ''Inventory of Approved Information Collection Collections, Collection Under Review, Recently Approved/Expired,'' then scroll under ''Currently Under Review'' to Department of Labor (DOL) to view all of DOL's ICRs, including those ICRS submitted for proposed rulemakings. For further information, contact Mr. Todd Owen, OSHA, Directorate of Standards and Guidance, OSHA, Room N–3609, U.S. Department of Labor, 200 Constitution Avenue, NW., Washington, DC 20210; telephone (202) 693–2222.

X. State Plan States

When Federal OSHA promulgates a new standard or standards amendment which imposes additional or more stringent requirements than an existing standard, the 26 States and U.S. Territories with their own OSHA-approved occupational safety and health plans must revise their standards to reflect the new standard or amendment, or show the Agency why such action is unnecessary (e.g., because an existing State standard covering this area already is at least as effective as the new Federal standard or amendment) (29 U.S.C. 553.5(a)). The State standard must be at least as effective as the final Federal rule, must be applicable to both the private and public (i.e., State and local government employees) sectors, and must be completed within six months of the publication date of the final Federal rule. When OSHA promulgates a new standard or amendment that does not impose additional or more stringent requirements than an existing standard, States are not required to revise their standards, although the Agency may encourage them to do so. The 26 States and Territories with OSHA-approved State Plans are: Alaska, Arizona, California, Hawaii, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Nevada, New Mexico, North Carolina, Oregon, Puerto Rico, South Carolina, Tennessee, Utah, Vermont, Virginia, Washington, and Wyoming. Connecticut, New Jersey, New York, and the Virgin Islands have OSHA-approved State Plans that apply to State and local government employees only.

Since this proposed rule imposes additional or more stringent requirements, State Plans that cover maritime issues and/or have public employees working in the maritime industries covered by this standard would be required to revise their standard appropriately within six months of publication of the final rule.

XI. Public Participation

Submission of Comments and Access to Docket

OSHA invites comments on all aspects of the proposed rule. Throughout this document OSHA has invited comment on specific issues and requested information and data about practices at your establishment and in your industry. OSHA will carefully review and evaluate these comments, information and data, as well as all other information in the rulemaking record, to determine how to proceed.

You may submit comments in response to this document (1) electronically at *http://www.regulations.gov*, which is the Federal eRulemaking Portal; (2) by facsimile (FAX); or (3) by hard copy. All comments, attachments and other material must identify the Agency name and the OSHA docket number for this rulemaking (Docket No. OSHA–S049–2006–0675). You may supplement electronic submissions by uploading document files electronically. If, instead, you wish to mail additional materials in reference to an electronic or fax submission, you must submit three copies to the OSHA Docket Office (see **ADDRESSES** section). The additional materials must clearly identify your electronic comments by name, date, and docket number so OSHA can attach them to your comments.

Because of security-related procedures, the use of regular mail may cause a significant delay in the receipt of comments. For information about security procedures concerning the delivery of materials by hand, express delivery, messenger or courier service, please contact the OSHA Docket Office at (202) 693–2350 (TTY (877) 889–5627).

Comments and submissions in response to this **Federal Register** notice are posted without change at *http://www.regulations.gov* (Docket No. OSHA–S049–2006–0675_). Therefore, OSHA cautions commenters about submitting personal information such as social security numbers and date of birth.

Exhibits referenced in this **Federal Register** document are posted at *http://www.regulations.gov* (Docket No. OSHA–S049–2006–0675) and/or at *http://dockets.osha.gov* (OSHA Docket Nos. S–049, SESAC–1988 through SESAC–1993, MACOSH–1995 through MACOSH–2005, S–012, S–012A, S–012B, S–024, H–308).

Although all submissions in response to this **Federal Register** notice and exhibits referenced in this **Federal Register** notice are listed in the *http://www.regulations.gov* and/or *http://dockets.osha.gov* indexes, some information (e.g., copyrighted material) is not publicly available to read or download through those Webpages. All submissions and exhibits, including copyrighted material, are available for inspection and copying at the OSHA Docket Office. Information on using *http://www.regulations.gov* to submit comments and access dockets is available at the Webpage's User Tips link. Contact the OSHA Docket Office for information about materials not available through the Webpage and for assistance in using the Internet to locate docket submissions.

Electronic copies of this **Federal Register** document are available at *http://www.regulations.gov*. This document, as well as news releases and other relevant information, also are available at OSHA's Webpage at *http://www.osha.gov*.

Requests for Informal Public Hearings

Under section 6(b)(3) of the OSH Act (29 U.S.C. 655) and 29 CFR 1911.11, interested parties may request an informal public hearing. Hearing requests must be submitted to the OSHA Docket Office at the address above and must comply with the following:

(1) The hearing requests must include the name and address of the person submitting them;

(2) The hearing requests must be submitted (postmarked or sent) by March 19, 2008.

(3) The hearing requests must specify with particularity the provision of the proposed rule to which each objection is taken and the basis for the objection;

(4) Each hearing request must be separately stated and numbered; and

(5) The hearing requests must be accompanied by a detailed summary of the evidence proposed to be presented at the requested hearing.

List of Subjects

29 CFR Part 1910

Hazardous substances, Occupational safety and health, Reporting and recordkeeping requirements, and Vessels.

29 CFR Part 1915

Hazardous substances, Longshore and harbor workers, Occupational safety and health, Reporting and recordkeeping requirements, and Vessels.

XII. Authority and Signature

This document was prepared under the direction of Edwin G. Foulke, Jr., Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, 200 Constitution Avenue, NW., Washington, DC 20210. It is issued under sections 4, 6 and 8 of the Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657), section 941 of the Longshore and Harbor Workers' Compensation Act (33 U.S.C. 901 *et seq.*), Secretary of Labor's Order No. 5–2007 (72 FR 31159), and 29 CFR part 1911.

Signed at Washington, DC this 7th day of December, 2007.

Edwin G. Foulke, Jr.,

Assistant Secretary of Labor for Occupational Safety and Health.

XIII. The Proposed Standard

For the reasons set forth in the preamble, OSHA proposes to amend 29 CFR parts 1910 and 1915 as follows:

PART 1910—[AMENDED]

Part 1910 of title 29 of the Code of Federal Regulation is hereby proposed to be amended as follows:

Subpart J—[Amended]

1. The authority citation for subpart J of 29 CFR part 1910 is revised to read as follows:

Authority: Secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No. 12–71 (36 FR 8754), 8–76 (41 FR 25059), 9–83 (48 FR 35736), 1–90 (55 FR 9033), 6–96 (62 FR 111), 3–2000 (65 FR 50017), 5–2002 (67 FR 65008) or 5–2007 (72 FR 31159) as applicable.

Section 1910.145 also issued under 29 CFR part 1911.

2. In § 1910.145, paragraphs (a)(1) and (f)(1)(ii) are revised to read as follows:

§ 1910.145 Specifications for accident prevention signs and tags.

(a) *Scope.* (1) These specifications apply to the design, application, and use of signs or symbols (as included in paragraphs (c) through (e) of this section) intended to indicate and, insofar as possible, to define specific hazards of a nature such that failure to designate them may lead to accidental injury to workers or the public, or both, or to property damage. These specifications are intended to cover all safety signs except those designed for streets, highways, and railroads. These specifications do not apply to plant bulletin boards or to safety posters.

* * * * *

(f) * * *

(1) * * *

(ii) This paragraph (f) does not apply to construction or agriculture.

* * * * *

3. In § 1910.147, paragraph (a)(1) is revised to read as follows:

§ 1910.147 The control of hazardous energy (lockout/tagout).

(a) *Scope, application, and purpose*—(1) *Scope.*

(i) This standard covers the servicing and maintenance of machines and equipment in which the unexpected energization or start up of the machines or equipment, or release of stored energy could cause injury to employees. This standard establishes minimum performance requirements for the control of such hazardous energy.

(ii) This standard does not cover the following:

(A) Construction and agriculture employment; and

(B) Employment covered by parts 1915, 1917, and 1918 of this title.

Note to paragraph (a)(1): Section 1910.147 applies to the servicing of equipment onboard vessels that is used for inherently general industry operations such as fish processing. However, if such servicing is part of a general overhaul and repair of the entire vessel, part 1915 applies.

* * * * *

Subpart N—[Amended]

4. The authority citation for subpart N of 29 CFR part 1910 is revised to read as follows:

Authority: Secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No. 12–71 (36 FR 8754), 8–76 (41 FR 25059), 9–83 (48 FR 35736), 1–90 (55 FR 9033), 6–96 (62 FR 111), 3–2000 (65 FR 50017), 5–2002 (67 FR 65008) or 5–2007 (72 FR 31159) as applicable.

Section 1910.177 also issued under 29 CFR part 1911.

5. In § 1910.177, paragraph (a)(2) is revised to read as follows:

§ 1910.177 Servicing multi-piece and single piece rim wheels.

(a) * * *

(2) This section does not apply to employers and places of employment regulated under the Longshoring Standards, 29 CFR part 1918, Construction Safety Standards, 29 CFR part 1926; or Agriculture Standards, 29 CFR part 1928.

* * * * *

PART 1915—[AMENDED]

6. The authority citation for part 1915 is revised to read as follows:

Authority: Sec. 41, Longshore and Harbor Workers' Compensation Act (33 U.S.C. 941); secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No. 12–71 (36 FR 8754), 8–76 (41 FR 25059), 9–83 (48 FR 35736), 1–90 (55 FR 9033), 6–96 (62 FR 111), 3–2000 (65 FR 50017), 5–2002 (67 FR 65008) or 5–2007 (72 FR 31159) as applicable; 29 CFR part 1911.

Subpart F—[Amended]

7. Subpart F of 29 CFR part 1915 is revised to read as follows:

Subpart F—General Working Conditions

Sec.
1915.80 Scope and application.
1915.81 Housekeeping.
1915.82 Lighting.
1915.83 Utilities.
1915.84 Work in confined or isolated spaces.
1915.85 Vessel radar and radio transmitters.
1915.86 Lifeboats.
1915.87 Medical services and first aid.
1915.88 Sanitation.
1915.89 Control of hazardous energy (lockout/tagout).
1915.90 Safety color code for marking physical hazards.
1915.91 Accident prevention signs and tags.
1915.92 Retention of DOT markings, placards, and labels.
1915.93 Motor vehicle safety equipment, operation, and maintenance.
1915.94 Servicing multi-piece and single-piece rim wheels.
1915.95 Definitions.

Subpart F—General Working Conditions

§ 1915.80 Scope and application.

The provisions of this subpart apply to general working conditions in shipyard employment, regardless of geographic location, including work onboard vessels, vessel sections, and landside operations.

§ 1915.81 Housekeeping.

(a) The employer shall maintain good housekeeping conditions to ensure that walking and working surfaces do not create a hazard for employees. The employer shall ensure that these conditions are maintained at all times.

(b) The employer shall ensure that walking and working surfaces provide adequate space for work and passage.

(c) The employer shall ensure that only tools, materials, and equipment necessary to perform the job in progress are kept on walking and working surfaces. All other tools, materials, and equipment shall be stored or located in an area that does not interfere with walking and working surfaces.

(d) The employer shall ensure that the floor or deck of every work area shall be maintained, so far as practicable, in a dry condition. Where wet processes are used, drainage shall be maintained and the employer shall provide false floors, platforms, mats or other dry standing places. Where this is not practicable, the employer shall provide appropriate waterproof footgear, such as rubber overboots, in accordance with § 1915.152.

(e) The employer shall ensure that walking and working surfaces are kept clear of debris, including solid and liquid wastes, and other objects that may create a safety or health hazard to employees, such as protruding nails, splinters, loose boards, and unnecessary holes and openings.

(f) The employer shall ensure that free access is maintained to exits, firealarm boxes, fire call stations, and firefighting equipment.

(g) The employer shall ensure that slippery conditions, such as snow and ice, on walking and working surfaces are eliminated as they occur.

(h) The employer shall ensure that construction materials are stacked in a manner that does not create a hazard to employees.

(i) The employer shall ensure that hoses and electrical service cords are hung over or placed under walking and working surfaces or covered by crossovers to prevent injury to employees and damage to the hoses and cords.

(j) The employer shall ensure that flammable substances, such as paint thinners, solvents, rags and waste, are stored in covered fire-resistant containers when not in use.

(k) The employer shall ensure that combustible scrap is removed from work areas as soon as possible.

§ 1915.82 Lighting.

(a) *General Requirements.* (1) The employer shall ensure that each area of the workplace is illuminated to at least the intensities in Table 1 whenever an employee is present. The requirement to provide illumination in accordance with Table 1 applies to permanent and temporary lighting.

TABLE 1 TO SUBPART F.—MINIMUM LIGHTING INTENSITIES IN FOOT-CANDLES

Lumens (foot-candles)	Area or operation
3	General areas on vessels and vessel sections such as accessways, exits, gangways, stairs, and walkways.
5	General landside areas such as corridors, exits, stairs, and walkways.

TABLE 1 TO SUBPART F.—MINIMUM LIGHTING INTENSITIES IN FOOT-CANDLES—Continued

Lumens (foot-candles)	Area or operation
5	All assigned work areas on any vessel or vessel section. Landside tunnels, shafts, vaults, pumping stations, and underground work areas.
10	Landside work areas such as machine shops, electrical equipment rooms, carpenter shops, lofts, tool rooms, warehouses, and outdoor work areas.
10	Changing rooms, showers, sewered toilet facilities, and eating, drinking, and break areas.
30	First aid stations, infirmaries, and offices.

Note to Table 1: The values in table 1 do not apply to emergency or handheld portable lights.

(2) The employer shall ensure that matches and open flame devices are not used for lighting.

(b) *Temporary lights.* The employer shall ensure that temporary lights meet the following requirements:

(1) Lights with bulbs that are not completely recessed are equipped with guards to prevent accidental contact;

(2) Lights are equipped with electric cords designed with sufficient capacity to safely carry the electric load;

(3) Connections and insulation are maintained in a safe condition;

(4) Lights and lighting stringers are not suspended solely by their electric cords unless they are designed by the manufacturer to be suspended in this way;

(5) Lighting stringers do not overload branch circuits;

(6) Branch circuits are equipped with over-current protection whose capacity does not exceed the rated current-carrying capacity of the cord used;

(7) Splices have insulation with a capacity that exceeds that of the cable; and

(8) Exposed, non-current-carrying metal parts of lights are grounded. The employer shall ensure that grounding is provided either through a third wire in the cable containing the circuit conductors or through a separate wire that is grounded at the source of the current. Grounding shall be done in accordance with the requirements of § 1915.132(b).

(c) *Handheld portable lights.* (1) In any dark area that does not have permanent or temporary lights, where lights are not working, or are not readily accessible, the employer shall provide handheld portable lights and ensure that employees do not enter those areas without such lights.

(2) Where temporary lighting from sources outside the vessel or vessel section is the only means of illumination, the employer shall ensure that handheld portable lights are available in the immediate work area to provide illumination so each employee is able to move safely if the temporary lights fail.

(3) The employer shall ensure that only explosion-proof, self-contained handheld portable lights are used in areas that are not gas-free, or other electric equipment approved by a nationally recognized testing laboratory (NRTL). Handheld portable lights bearing the approval of a NRTL for the class and division of the location in which they are used are considered to meet the requirements of this paragraph.

§ 1915.83 Utilities.

(a) *Steam supply system.* The employer shall ensure that the vessel's steam piping system, including hoses, has a safe working pressure prior to supplying steam from an outside source. The employer shall ensure that each steam supply system meets the following:

(1) A pressure gauge and a relief valve are installed at the point where the temporary steam hose joins the vessel's steam piping system;

(2) Each relief valve is set and is capable of relieving steam at a pressure that does not exceed the safe working pressure of the system in its present condition;

(3) There are no means of disconnecting any relief valve from the system that it protects;

(4) Each pressure gauge and relief valve is kept in legible condition and located so it is visible and readily accessible; and

(5) The relief valve is positioned or placed in a location where it is not likely to cause injury if it is activated.

(b) *Steam hoses.* The employer shall ensure that each steam hose meets the following:

(1) The steam hose and its fittings have a safety factor of at least five (5);

(2) The steam hose is hung with short bights to prevent chafing and to reduce tension on the hose and its fittings;

(3) Each steam hose is protected from damage; and

(4) Each steam hose or temporary piping passing through a walking or working area is shielded to protect employees from contact.

(c) *Electric shore power.* When a vessel is supplied with electric shore power, the employer shall ensure the following precautions are taken prior to energizing the vessel's circuits:

(1) The vessel is grounded if it is in dry dock;

(2) Circuits to be energized are in a safe condition; and

(3) Circuits to be energized are equipped with over-current protection that does not exceed the rated current-carrying capacity of the conductors.

(d) *Heat lamps.* The employer shall ensure that heat lamps, including the face, are equipped with surround-type guards to prevent contact with the lamp and bulb.

§ 1915.84 Work in confined or isolated spaces.

Except as provided in § 1915.51(c)(3) of this part, whenever an employee is working in a confined space or alone in an isolated location, the employer shall ensure that each employee is:

(a) Checked frequently during each workshift to ensure the employee's safety; and

(b) Accounted for at the end of each workshift.

§ 1915.85 Vessel radar and radio transmitters.

(a) The employer shall secure each radar and radio transmitter so it is incapable of energizing or emitting radiation before any employee begins to work on it or on a mast, king post, or other area near the radar or radio transmitter.

(b) The employer shall ensure that hazardous energy is controlled in accordance with § 1915.89 Control of Hazardous Energy prior to servicing, repairing or testing any vessel radar or radio transmitter.

(c) The employer shall schedule the testing of radar or radio transmitter at a time when no work is in progress aloft or when personnel can be cleared a minimum safe distance from the danger area. The employer shall follow minimum safe distances established for the type, model, and power of the equipment being tested.

§ 1915.86 Lifeboats.

(a) The employer shall ensure that before any employee works in or on a lifeboat, either in a stowed or suspended position, that the lifeboat is secured independently of the releasing gear to prevent it from falling or capsizing.

(b) The employer shall not permit any employee to be in a lifeboat while it is being hoisted.

(c) The employer shall not permit any employee to work on the outboard side of a lifeboat that is stowed on chocks unless the lifeboat is secured by gripes or another device that prevents it from swinging outboard.

§ 1915.87 Medical services and first aid.

(a) *General Requirement.* The employer shall ensure that medical services and first aid are readily accessible.

(b) *Advice and consultation.* The employer shall ensure that health care professionals are readily available for advice and consultation on matters of workplace health.

(c) *First aid providers.* (1) The employer shall ensure that there are an adequate number of employees at each work location during each workshift who are qualified to render first aid, including cardiopulmonary resuscitation (CPR). The employer shall consider the following factors in determining the number of employees who must have first aid training: Size and location of each shipyard work location; the number of employees at each work location; the nature of the hazards present at each work location; and the distance of each work location from hospitals, clinics, and rescue squads.

(2) The employer shall ensure that any employee designated to provide first aid has a valid first aid certificate, such as is issued by the Red Cross, American Heart Association, or other equivalent organization.

(d) *First aid supplies.*(1) The employer shall provide and maintain adequate first aid supplies at each work location.

(2) The employer shall ensure that the placement, content, and amount of first aid supplies are adequate for the size and location of each work location, the number of employees at each work location, the nature of the hazards present at each work location, and the distance of each work location from hospitals, clinics, and rescue squads.

(3) The employer shall inspect first aid supplies at intervals that ensure supplies are in dry, sterile and serviceable condition.

(e) *Quick drenching/flushing facilities.* Where there is a possibility that an employee could be injured if splashed with hazardous or toxic substances, the employer shall provide facilities for quick drenching or flushing the eyes and body. The employer shall ensure that a facility is located within each work area for immediate emergency use.

(f) *Basket stretchers.* (1) The employer shall ensure there are an adequate number of basket stretchers, or the equivalent, readily accessible where work is being performed onboard a vessel or vessel section.

(2) The employer shall ensure each stretcher is equipped with:

(i) Permanent lifting bridles that enable the stretcher to be attached to hoisting gear and that are capable of lifting at least 5,000 pounds (2,270 kg);

(ii) Restraints that are capable of securely holding the injured employee while the stretcher is lifted or moved; and

(iii) A blanket or other suitable covering for the injured employee.

(3) The employer shall store stretchers in a clearly-marked location in a manner that prevents damage and protects them from environmental conditions.

(4) The employer shall inspect stretchers at intervals that ensure they remain in a safe and serviceable condition.

Appendix A to § 1915.87—First Aid Kits (Non-Mandatory)

1. First aid supplies are required to be adequate and readily accessible under paragraphs § 1915.88(a) and (d). An example of the minimal contents of a generic first aid kit for workplace settings is described in American National Standard (ANSI) Z308.1–2003 ''Minimum Requirements for Workplace First Aid Kits.'' The contents of the kit listed in the ANSI standard should be adequate for small work locations. When larger operations or multiple operations are being conducted at the same location, employers should determine the need for additional first aid kits at the work location, additional types of first aid equipment and supplies, and additional quantities and types of supplies and equipment in the first aid kits.

2. In a similar fashion, employers who have unique or changing first aid needs in their workplace may need to enhance their first aid kits. The employer can use the OSHA 300 Log, OSHA 301's or other reports to identify these unique problems. Consultation from the local fire/rescue department, appropriate healthcare professional, or local emergency room may be helpful to employers in these circumstances. By assessing the specific needs of their workplace, employers can ensure that reasonably anticipated supplies are available. Employers should assess the specific needs of their worksite periodically and augment first aid kits appropriately.

3. If it is reasonably anticipated that employees will be exposed to blood or other potentially infectious materials while using first aid supplies, employers are required to provide appropriate personal protective equipment (PPE) in compliance with the provisions of the Occupational Exposure to Bloodborne Pathogens standard, § 1910.1030(d)(3) (56 FR 64175). This standard lists appropriate PPE for this type of exposure, such as gloves, gowns, face shields, masks, and eye protection.

§ 1915.88 Sanitation

(a) *General Requirements.* (1) The employer shall provide adequate and readily accessible sanitation facilities.

(2) The employer shall supply and maintain each sanitation facility in a clean, sanitary, and serviceable condition.

(b) *Potable water.* (1) The employer shall provide potable water for all employee health and personal needs and ensure that only potable water is used for these purposes.

(2) The employer shall provide potable drinking water in amounts that are adequate to meet the health and personal needs of each employee.

(3) The employer shall dispense drinking water from a fountain, a covered container with single-use drinking cups stored in a sanitary receptacle, or single-use bottles. The employer shall prohibit the use of shared drinking cups, dippers, and water bottles.

(c) *Non-potable water.* (1) The employer may use non-potable water for other purposes such as firefighting and cleaning outdoor premises so long as it does not contain chemicals, fecal matter, coliform or other substances at levels that may create a hazard for employees.

(2) The employer shall clearly mark non-potable water supplies and outlets as ''not safe for health or personal use.''

(d) *Toilet facilities*—(1) *General requirements.* The employer shall ensure that sewered and portable toilet facilities:

(i) Are separate for each sex, except as provided in paragraph (d)(1)(i)(B) of this section;

(A) The number of toilet facilities provided for each sex shall be based on the maximum number of employees of that sex present at the workplace at any one time during a workshift. A single occupancy toilet room shall be counted as one toilet regardless of the number of toilets it contains;

(B) The employer does not have to provide separate toilet facilities for each sex where they will not be occupied by more than one employee at a time, can be locked from the inside, and contain at least one toilet; and

(ii) Ensure privacy at all times. Where a toilet room contains more than one

toilet, each toilet shall occupy a separate compartment with a door and walls or partitions between them that are sufficiently high to ensure privacy.

(2) *Sewered toilet facilities.* The employer shall provide at least the following number of sewered toilet facilities for each sex.

TABLE 2 TO SUBPART F

Number of employees of each sex	Minimum number of toilet facilities
1 to 15	1
16 to 35	2
36 to 55	3
56 to 80	4
81 to 110	5
111 to 150	6
Over 150	1 additional toilet facility for each additional 40 employees.

Note to Table 2. Where toilet facilities will only be used by men, urinals may be provided instead of toilet facilities, except that the number of toilets in such cases shall not be reduced to less than ⅔rds of the minimum specified.

(3) *Portable toilet facilities.* In addition to the required number of sewered toilet facilities, the employer may also provide portable toilet facilities. The employer shall ensure that each portable toilet facility is maintained in a clean, sanitary and serviceable condition, equipped with adequate venting and, as necessary, lighting and heating.

(4) *Exception for normally unattended work locations.* The requirement to provide toilet facilities does not apply to normally unattended work locations and mobile work crews, provided that the employer ensures that employees have immediately available transportation to readily accessible sanitation facilities that are maintained in a clean, sanitary and serviceable condition and meet the requirements of this section.

(e) *Handwashing facilities.* (1) The employer shall provide handwashing facilities at or adjacent to each toilet facility.

(2) The employer shall ensure that each handwashing facility:

(i) Is equipped with either hot and cold or lukewarm running water and soap, or with waterless skin cleansing agents that are capable of disinfecting the skin or neutralizing the contaminants to which the employee may be exposed; and

(ii) If the facility uses soap and water, it is supplied with clean, single-use hand towels stored in a sanitary container and a sanitary means for disposing of them, clean individual sections of continuous cloth toweling, or an air blower.

(3) *Exception for normally unattended work locations.* The requirement to provide handwashing facilities does not apply to normally unattended work locations and mobile work crews, provided that the employer ensures that employees have immediately available transportation to readily accessible sanitation facilities that are maintained in a clean, sanitary and serviceable condition and meet the requirements of paragraphs (e)(1) through (e)(2) of this section.

(4) The employer shall inform each employee engaged in the application of paints or coatings or in other operations where hazardous or toxic substances can be ingested or absorbed about the need for removing surface contaminants by thorough washing of hands and face at the end of the workshift and prior to eating, drinking, or smoking.

(f) *Showers.* (1) When showers are required by an OSHA standard, the employer shall provide one shower for each 10, or fraction of 10 employees of each sex, who are required to shower during the same workshift.

(2) The employer shall ensure that each shower is equipped with soap, hot and cold water, and clean towels for each employee who uses the shower.

(g) *Changing rooms.* When an employer provides protective clothing to prevent employee exposure to hazardous or toxic substances, the employer shall provide the following:

(1) Changing rooms that provide privacy for each sex; and

(2) Storage facilities for street clothes and separate storage facilities for protective clothing.

(h) *Eating, drinking and break areas.* The employer shall ensure that food, beverages and tobacco products are not consumed or stored in any area where hazardous or toxic substances may be present.

(i) *Waste disposal.* (1) The employer shall provide waste receptacles that meet the following requirements:

(i) Each receptacle is constructed of materials that are corrosion resistant, leak-proof and easily cleaned or disposable;

(ii) Each receptacle is equipped with a solid tight-fitting cover, unless it can be kept in clean, sanitary and serviceable condition without the use of a cover;

(iii) Receptacles are provided in numbers, sizes and locations that encourage their use; and

(iv) Each receptacle is emptied as often as necessary to prevent it from overfilling and in a manner that does not create a hazard for employees. Waste receptacles for food shall be emptied at least every day, unless unused.

(2) The employer shall not permit employees to work in the immediate vicinity of uncovered garbage that could endanger their safety and health.

(3) The employer shall ensure that employees working beneath or on the outboard side of a vessel are not contaminated by drainage or waste from overboard discharges.

(j) *Vermin control.* (1) To the extent reasonably practicable, the employer shall clean and maintain the workplace in a manner that prevents the harborage of vermin such as rodents, insects and birds.

(2) Where vermin are detected, the employer shall implement and maintain an effective control program.

§ 1915.89 Control of hazardous energy (lockout/tagout).

(a) *Scope, application and purpose*—(1) *Scope.* This standard covers the servicing and maintenance of machines, equipment and systems in which the energization or start up of the machines, equipment, systems, or release of stored energy, could cause injury to employees. This standard establishes minimum performance requirements for the control of such hazardous energy.

(2) *Application.* (i) This standard applies to the control of hazardous energy during servicing and maintenance of machines, equipment and systems, including those onboard vessels and vessel sections, including:

(A) Servicing of ship's systems by any employee, including, but not limited to, ship's officers or crew of the vessel; and

(B) Servicing of machines, equipment and systems that employees use in the course of shipyard employment.

(ii) Normal production operations are not covered by this standard (See subpart O of 29 CFR part 1910 and subpart H of this part for machine guarding). Servicing and/or maintenance which takes place during normal production operations is covered by this standard only if:

(A) An employee is required to remove or bypass a guard or other safety device; or

(B) An employee is required to place any part of his or her body into an area on a machine, piece of equipment or system where work is actually performed upon the material being processed (point of operation) or where an associated danger zone exists during an operating cycle.

Note to paragraph (a)(2(ii): *Exception.* Minor tool changes and adjustments, and other minor servicing activities, which take

place during normal production operations, are not covered by this standard if they are routine, repetitive, and integral to the use of the machine, equipment or system for production, provided that the work is performed using alternative measures which provide effective protection (See subpart O of 29 CFR part 1910).

(iii) This standard does not apply to the following:

(A) Work on cord and plug connected electric machines or equipment provided that energization or start up is controlled by the unplugging of the machines or equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance;

(B) Hot tap operations involving transmission and distribution systems for substances such as gas, steam, water or petroleum products when they are performed on pressurized pipelines, provided that the employer demonstrates that continuity of service is essential; shutdown is impractical; and documented procedures are followed, and special equipment is used that will provide proven effective protection for employees; and

(C) The servicing and maintenance of machines, equipment and systems onboard vessels that are used for inherently general industry operations such as fish processing.

(3) *Purpose.* (i) This section requires employers to establish a program and utilize procedures for affixing appropriate lockout devices or tagout devices to energy isolating devices and to otherwise disable machines, equipment or systems to prevent energization, start up or release of stored energy in order to prevent injury to employees.

(ii) When other standards in this part or applicable standards in part 1910 require the use of lockout or tagout, they shall be used and supplemented by the procedural and training requirements of this section.

(b) *General*—(1) *Energy control program.* The employer shall establish a program consisting of energy control procedures, employee training and periodic inspections to ensure that before any employee performs any servicing or maintenance where the energizing, startup or release of stored energy could occur and cause injury, the machine, equipment or system shall be isolated from the energy source and rendered inoperative.

(2) *Lockout/tagout.* (i) If an energy isolating device is not capable of being locked out, the employer's energy control program under paragraph (b)(1) of this section shall utilize a tagout system.

(ii) If an energy isolating device is capable of being locked out, the employer's energy control program under paragraph (b)(1) of this section shall utilize lockout, unless the employer can demonstrate that the utilization of a tagout system will provide full employee protection as set forth in paragraph (b)(3) of this section.

(iii) After [Insert Date 90 Days After Publication of a Final Rule in the Federal Register], whenever replacement or major repair, renovation or modification of a machine, equipment or system is performed, and whenever a new machine, equipment or system is installed, the employer shall ensure that energy isolating devices for the machine, equipment or system are designed to accept a lockout device. This requirement does not apply to a machine, equipment or system that is part of a vessel or vessel section the shipyard employer does not own.

(3) *Full employee protection.* (i) When a tagout device is used on an energy isolating device that is capable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been attached, and the employer shall demonstrate that the tagout program will provide a level of safety equivalent to that obtained by using a lockout program.

(ii) In demonstrating that a level of safety is achieved in the tagout program that is equivalent to the level of safety obtained by using a lockout program, the employer shall demonstrate full compliance with all tagout-related provisions of this standard together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of additional safety measures, such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energization.

(4) *Energy control procedures.* (i) Procedures shall be developed, documented and utilized for the control of potentially hazardous energy when employees are engaged in the activities covered by this section.

Note to paragraph (b)(4)(i): *Exception.* The employer need not document the required procedure for a particular machine, equipment or system when all of the following elements exist: (1) The machine, equipment or system has no potential for stored or residual energy or reaccumulation of stored energy after shut down that could endanger employees; (2) the machine, equipment or system has a single energy source which can be readily identified and isolated; (3) the isolation and locking out of that energy source will completely deenergize and deactivate the machine, equipment or system; (4) the machine, equipment or system is isolated from that energy source and locked out during servicing or maintenance; (5) a single lockout device will achieve a locked-out condition; (6) the lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance; (7) the servicing or maintenance does not create hazards for other employees; and (8) the employer, in utilizing this exception, has had no accidents involving the activation or reenergization of the machine, equipment or system during servicing or maintenance.

(ii) Each procedure shall clearly and specifically outline the scope, purpose, authorization, rules and techniques to be utilized for the control of hazardous energy and the means to enforce compliance including, but not limited to, the following:

(A) A specific statement of the intended use of the procedure;

(B) Specific procedural steps for shutting down, isolating, blocking and securing machines, equipment or systems to control hazardous energy;

(C) Specific procedural steps for the placement, removal and transfer of lockout devices or tagout devices and the responsibility for them; and

(D) Specific requirements for testing a machine, equipment or system to determine and verify the effectiveness of lockout devices, tagout devices and other energy control measures.

(5) *Protective materials and hardware.* (i) Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided by the employer for isolating, securing or blocking of machines, equipment or systems from energy sources.

(ii) Lockout devices and tagout devices shall be singularly identified; shall be the only devices(s) used for controlling energy; shall not be used for other purposes; and shall meet the following requirements:

(A) *Durable. (1)* Lockout and tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

(2) Tagout devices shall be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.

(3) Tags shall not deteriorate when used in corrosive environments such as areas where acid and alkali chemicals are handled and stored.

(B) *Standardized.* Lockout and tagout devices shall be standardized within the facility in at least one of the following criteria: Color; shape; or size; and additionally, in the case of tagout devices, print and format shall be standardized.

(C) *Substantial—(1) Lockout devices.* Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.

(2) Tagout devices. Tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means shall be of a non-reusable type, attachable by hand, self-locking and non-releasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all environment-tolerant nylon cable tie.

(D) Identifiable. Lockout devices and tagout devices shall indicate the identity of the employee applying the device(s).

(iii) Tagout devices shall warn against hazardous conditions if the machine, equipment or system is energized and shall include a legend such as the following: *Do Not Start; Do Not Open; Do Not Close; Do Not Energize; Do Not Operate.*

(6) *Periodic Inspection.* (i) The employer shall conduct a periodic inspection of each energy control procedure at least annually to ensure that the procedures and the requirements of this standard are being followed and to correct any deficiencies.

(A) The periodic inspection shall be performed by an authorized employee other than the employees(s) utilizing the energy control procedure being inspected.

(B) Where lockout is used for energy control, the periodic inspection shall include a review between the inspector and each authorized employee of that employee's responsibilities under the energy control procedure being inspected.

(C) Where tagout is used for energy control, the periodic inspection shall include a review between the inspector and each authorized and affected employee of that employee's responsibilities under the energy control procedure being inspected and the elements set forth in paragraph (b)(7)(ii) of this section.

(ii) The employer shall certify that the periodic inspections have been performed. The certification shall identify the machine, equipment or system on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection and the person performing the inspection.

(7) *Training and communication.* (i) *General.* The employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage and removal of the energy controls are acquired by employees. The training shall include the following:

(A) Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace and the methods and means necessary for energy isolation and control.

(B) Each affected employee shall be instructed in the purpose and use of the energy control procedure.

(C) Each affected employee and all other employees whose work operations are or may be in an area where energy control procedures may be utilized shall be instructed about the procedure and about the prohibition relating to attempts to restart or reenergize machines, equipment or system which are locked out or tagged out.

(ii) *Tagout System Training.* When tagout systems are used, employees shall also be trained in the following limitations of tags:

(A) Tags are essentially warning devices affixed to energy isolating devices and do not provide the physical restraint on those devices that is provided by a lock;

(B) When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it and it is never to be bypassed, ignored, or otherwise defeated;

(C) Tags must be legible and understandable by all authorized employees, affected employees and all other employees whose work operations are or may be in the area;

(D) Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace;

(E) Tags may evoke a false sense of security and their meaning needs to be understood as part of the overall energy control program; and

(F) Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

(iii) *Employee retraining.* (A) Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments; a change in machines, equipment, systems or processes that present a new hazard; or when there is a change in the energy control procedures.

(B) Additional retraining shall also be conducted whenever a periodic inspection under paragraph (b)(6) of this section reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

(C) The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.

(iv) *Certification.* The employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.

(8) *Energy isolation.* Lockout or tagout shall be performed only by the authorized employees who are performing the servicing or maintenance.

(9) *Notification of employees.* Affected employees shall be notified by the employer or authorized employee of the application and removal of lockout devices or tagout devices. Notification shall be given before the controls are applied and after they are removed from the machine, equipment or system.

(c) *Application of control.* The established procedures for the application of energy control (the lockout or tagout procedures) shall cover the following elements and actions and shall be done in the following sequence:

(1) *Preparation for shutdown.* Before an authorized or affected employee turns off a machine, equipment or system, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled and the method or means to control the energy.

(2) *Machine, equipment or system shutdown.* The machine, equipment or system shall be turned off or shut down using the procedures established for the machine, equipment or system. An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage.

(3) *Machine, equipment or system isolation.* All energy isolating devices

that are needed to control the energy to the machine, equipment or system shall be physically located and operated in such a manner as to isolate the machine, equipment or system from the energy source(s).

(4) *Lockout or tagout device application.* (i) Lockout or tagout devices shall be affixed to each energy isolating device by authorized employees.

(ii) Lockout devices, where used, shall be affixed in a manner that will hold the energy isolating devices in a ''safe'' or ''off'' position.

(iii) Tagout devices, where used, shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the ''safe'' or ''off'' position is prohibited.

(A) Where tagout devices are used with energy isolating devices designed with the capability of being locked, the tag attachment shall be fastened at the same point at which the lock would have been attached.

(B) Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

(5) *Stored energy.* (i) Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained and otherwise rendered safe.

(ii) If there is a possibility of reaccumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists.

(6) *Verification of isolation.* Prior to starting work on machines, equipment or system that have been locked out or tagged out, the authorized employee shall verify that isolation and deenergization of the machine, equipment or system have been accomplished.

(d) *Release from lockout or tagout.* Before lockout or tagout devices are removed and energy is restored to the machine, equipment or system, procedures shall be followed and actions taken by the authorized employee(s) to ensure the following:

(1) *The machine, equipment or system.* The work area shall be inspected to ensure that nonessential items have been removed and to ensure that machine, equipment or system components are operationally intact.

(2) *Employees.* (i) The work area shall be checked to ensure that all employees have been safely positioned or removed.

(ii) After lockout or tagout devices have been removed and before a machine, equipment or system is started, affected employees shall be notified that the lockout or tagout device(s) have been removed.

(3) *Lockout or tagout devices removal.* Each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device.

Note to paragraph (d)(3): *Exception.* When the authorized employee who applied the lockout or tagout device is not available to remove it, that device may be removed under the direction of the employer, provided that specific procedures and training for such removal have been developed, documented and incorporated into the employer's energy control program. The employer shall demonstrate that the specific procedure provides equivalent safety to the removal of the device by the authorized employee who applied it. The specific procedure shall include at least the following elements:

(i) Verification by the employer that the authorized employee who applied the device is not at the facility;

(ii) Making all reasonable efforts to contact the authorized employee to inform he or she that his or her lockout or tagout device has been removed; and

(iii) Ensuring that the authorized employee has this knowledge before he/she resumes work at that facility.

(e) *Additional requirements*—(1) *Testing or positioning of machines, equipment, systems, or their components.* In situations in which lockout or tagout devices must be temporarily removed from the energy isolating device and the machine, equipment or system energized to test or position it, the following sequence of actions shall be followed:

(i) Clear the machine, equipment, or system of tools and materials in accordance with paragraph (d)(1) of this section;

(ii) Remove employees from the machine, equipment or system area in accordance with paragraph (d)(2) of this section;

(iii) Remove the lockout or tagout devices as specified in paragraph (d)(3) of this section;

(iv) Energize and proceed with testing or positioning; and

(v) Deenergize all systems and reapply energy control measures in accordance with paragraph (c) of this section to continue the servicing and/or maintenance.

(2) *Outside personnel (contractors, ship's crew, etc.).* (i) Whenever outside servicing personnel such as contractors or ship's crew are to be engaged in activities covered by the scope and application of this standard, the on-site employer and the outside employer shall inform each other of their respective lockout or tagout procedures.

(ii) The on-site employer shall ensure that his/her employees understand and comply with the restrictions and prohibitions of the outside employer's energy control program.

(3) *Group lockout or tagout.* (i) When servicing and/or maintenance is performed by a crew, craft, department or other group, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device.

(ii) Group lockout or tagout devices shall be used in accordance with the procedures required by paragraph (b)(4) of this section including, but not necessarily limited to, the following specific requirements:

(A) Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lockout or tagout device (such as an operations lock);

(B) Provision for the authorized employee to ascertain the exposure status of individual group members with regard to the lockout or tagout of the machine, equipment or system;

(C) When more than one crew, craft, department, etc., is involved, assignment of overall job-associated lockout or tagout control responsibility to an authorized employee designated to coordinate affected work forces and ensure continuity of protection; and

(D) Each authorized employee shall affix a personal lockout or tagout device to the group lockout device, group lockbox, or comparable mechanism when he or she begins work and shall remove those devices when he or she stops working on the machine, equipment or system being serviced or maintained.

(4) *Shift or personnel changes.* Specific procedures shall be utilized during shift or personnel changes to ensure the continuity of lockout or tagout protection, including provision for the orderly transfer of lockout or tagout device protection between off-going and oncoming employees, to minimize exposure to hazards from the energization or start-up of the machine, equipment or system, or the release of stored energy.

Note to § 1915.89: The following appendix A to § 1915.89 serves as a non-mandatory guideline to assist employers and employees in complying with the requirements of this section, as well as to provide other helpful information. Nothing in the appendix adds to

or detracts from any of the requirements of this section.

Appendix A to § 1915.89, Typical Minimal Lockout Procedures

General

Lockout Procedure

Lockout Procedure for

_____

(Name of Company for single procedure or identification of machine, equipment or system, if multiple procedures are used).

Purpose

This procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or servicing is done on machines, equipment or systems. It shall be used to ensure that the machine, equipment or system is stopped, isolated from all potentially hazardous energy sources and locked out before employees perform any servicing or maintenance where the energization or start-up of the machine, equipment or system or release of stored energy could cause injury.

Compliance With This Program

All employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout. The authorized employees are required to perform the lockout in accordance with this procedure. All employees, upon observing a machine, equipment, or system that is locked out to perform servicing or maintenance shall not attempt to start, energize, or use that machine, equipment or system.

_____

Type of compliance enforcement to be taken for violation of the above.

Sequence of Lockout

(1) Notify all affected employees that servicing or maintenance is required on a machine, equipment or system and that it must be shut down and locked out to perform the servicing or maintenance.

_____

Name(s)/Job Title(s) of affected employees and how to notify.

(2) The authorized employee shall refer to the company procedure to identify the type and magnitude of the energy that the machine, equipment or system utilizes, shall understand the hazards of the energy and shall know the methods to control the energy.

_____

Type(s) and magnitude(s) of energy, its hazards and the methods to control the energy.

(3) If the machine, equipment or system is operating, shut it down by the normal stopping procedure (depress the stop button, open switch, close valve, etc.).

_____

Type(s) and location(s) of machine, equipment or system operating controls.

(4) De-activate the energy isolating device(s) so that the machine, equipment or system is isolated from the energy source(s).

_____

Type(s) and location(s) of energy isolating devices.

(5) Lock out the energy isolating device(s) with assigned individual lock(s).

(6) Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.

_____

Type(s) of stored energy—methods to dissipate or restrain.

(7) Ensure that the machine, equipment or system is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the machine, equipment or system by operating the push button or other normal operating control(s) or by testing to make certain it will not operate.

CAUTION: Return operating control(s) to neutral or ''off'' position after verifying the isolation of the machine, equipment or system.

_____

Method of verifying the isolation of the machine, equipment or system.

(8) The machine, equipment or system is now locked out.

Restoring Machine, Equipment or System to Service. When the servicing or maintenance is completed and the machine, equipment or system is ready to return to normal operating condition, the following steps shall be taken.

(1) Check the machine, equipment or system and the immediate area around the machine to ensure that nonessential items have been removed and that the machine, equipment or system components are operationally intact.

(2) Check the work area to ensure that all employees have been safely positioned or removed from the area.

(3) Verify that the controls are in neutral.

(4) Remove the lockout devices and reenergize the machine, equipment or system.

Note: The removal of some forms of blocking may require reenergization of the machine, equipment or system before safe removal.

(5) Notify affected employees that the servicing or maintenance is completed and the machine, equipment or system is ready for use.

§ 1915.90 Safety color code for marking physical hazards.

The requirements applicable to shipyard employment under this section are identical to those set forth at § 1910.144 of this chapter.

§ 1915.91 Accident prevention signs and tags.

The requirements applicable to shipyard employment under this section are identical to those set forth at § 1910.145 of this chapter.

§ 1915.92 Retention of DOT markings, placards and labels.

(a) Any employer who receives a package of hazardous material that is required to be marked, labeled, or placarded in accordance with the U.S. Department of Transportation Hazardous Materials Regulations shall retain those markings, labels and placards on the package until the packaging is sufficiently cleaned of residue and purged of vapors to remove any potential hazards.

(b) Any employer who receives a freight container, rail freight car, motor vehicle, or transport vehicle that is required to be marked or placarded in accordance with the U.S. Department of Transportation Hazardous Materials Regulations shall retain those markings and placards on the freight container, rail freight car, motor vehicle, or transport vehicle until the hazardous materials are sufficiently removed to prevent any potential hazards.

(c) The employer shall maintain markings, placards and labels in a manner that ensures that they are readily visible.

(d) For non-bulk packages that will not be reshipped, the requirements of this section are met if a label or other acceptable marking is affixed in accordance with 29 CFR 1910.1200 Hazard Communication.

(e) For the purposes of this section, the term ''hazardous material'' and any other terms not defined in this section have the same definition as in the U.S. Department of Transportation Hazardous Materials Regulations (49 CFR parts 171 through 180).

§ 1915.93 Motor vehicle safety equipment, operation and maintenance.

(a) *Application.* (1) This section applies to any vehicle used to transport employees, materials, or property at shipyards. This section does not apply to motor vehicle operation on public streets and highways.

(2) The requirements of this section apply to employer provided motor vehicles. The requirements of paragraphs (b)(2), (b)(4) and (c)(2) of this section also apply to employee provided motor vehicles.

(3) Only the requirements of paragraphs (b)(1) through (b)(3) apply to powered industrial trucks, as defined in § 1910.178. The maintenance, inspection, operation and training requirements in 29 CFR 1910.178 continue to apply to powered industrial trucks used for shipyard employment.

(b) *Motor vehicle safety equipment.* (1) The employer shall ensure that each motor vehicle acquired or initially used after February 19, 2008 is equipped with

a safety belt for each employee operating or riding in the motor vehicle. This requirement does not apply to any motor vehicle that was not equipped with safety belts at the time of manufacture.

(2) The employer shall ensure that each employee uses the safety belt, securely and tightly fastened, at all times while operating or riding in a motor vehicle.

(3) The employer shall ensure that vehicle safety equipment is not removed from any employer-provided vehicle. The employer shall replace safety equipment that is removed.

(4) The employer shall ensure that each motor vehicle used to transport an employee has firmly secured seats that are adequate for each employee being transported and shall ensure that all employees who are being transported are using seats.

(c) *Motor vehicle maintenance and operation.* (1) The employer shall ensure that each motor vehicle is maintained in a serviceable and safe operating condition and removed from service if it is not in such condition.

(2) The employer shall ensure that before a motor vehicle is operated, any tools and materials being transported are secured if their movements may create a hazard for employees.

(3) The employer shall implement measures to ensure that motor vehicle operators are able to see and avoid injuring pedestrians and bicyclists at shipyards. Measures that employers may implement to comply with this requirement include:

(i) Establishing dedicated travel lanes for motor vehicles, bicyclists and pedestrians;

(ii) Installing crosswalks and traffic control devices such as stop signs or physical barriers to separate travel lanes;

(iii) Providing reflective vests or other gear so pedestrians and bicyclists are clearly visible to motor vehicle operators; and

(iv) Ensuring that bicycles have reflectors, lights or other equipment to maximize visibility of the bicyclist.

§ 1915.94 Servicing multi-piece and single piece rim wheels.

The requirements applicable to shipyard employment under this section are identical to those set forth at 29 CFR 1910.177.

§ 1915.95 Definitions.

The following definitions are applicable to this subpart:

Affected employee. An employee whose job requires operation or use of a machine, equipment or system on which servicing or maintenance is being performed under lockout or tagout, or whose job requires work in an area in which such servicing or maintenance is being performed.

Authorized employee. A person who locks out or tags out machines, equipment, or systems in order to perform servicing or maintenance. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

Capable of being locked out. An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

Energized. Connected to an energy source or containing residual or stored energy.

Energy isolating device. A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

Energy source. Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Hazardous or toxic substances. Hazardous or toxic substances mean:

(1) Any substance regulated by subpart Z of part 1915;

(2) Any material listed in the U.S. Depart of Transportation Hazardous Materials Regulations (49 CFR parts 171 through 180);

(3) Any atmosphere with an oxygen content of less than 19.5%;

(4) Any corrosive substance; or

(5) Any environmental contaminant that may expose employees to injury, illness or disease.

Health care professional. A physician or any other health care provider whose legally permitted scope of practice allows the provider to independently provide or be delegated the responsibility to provide some or all of the advice or consultation this subpart requires.

Hot tap. A procedure used in the repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam and petrochemical distribution systems.

Lockout. The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout device. A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent energization or startup. Included are blank flanges and bolted slip blinds.

Motor vehicle. Any motor-driven vehicle operated by an employee that is used to transport employees, material, or property. For the purposes of this subpart, motor vehicles include passenger cars, light trucks, vans, motorcycles, all-terrain-vehicles, powered industrial trucks and other similar vehicles. Motor vehicle does not include boats or vehicles operated exclusively on a rail or rails.

Normal production operations. The utilization of a machine, equipment or system to perform its intended production function.

Portable toilet facility. A non-sewered facility for collecting and containing urine and feces. A portable toilet facility may be either flushable or non-flushable. For purposes of this section, portable toilet facilities do not include privies.

Potable water. Water that meets the standards for drinking purposes of the state or local authority having jurisdiction, or water that meets the quality standards prescribed by the U.S. Environmental Protection Agency's National Primary Water Regulations (40 CFR part 141).

Sanitation facilities. Facilities, including supplies, maintained for employee personal and health needs such as potable drinking water, toilet facilities, handwashing and drying facilities, showers (including quick drenching/flushing) and changing rooms, food preparation and eating areas, first aid stations and on-site medical service areas. Sanitation supplies include soap, waterless cleaning agents, single-use drinking

cups, drinking water containers, toilet paper and towels.

Serviceable condition. The state or ability of a tool, machine, vehicle, or other device, to operate as it was intended by the manufacturer to operate.

Servicing and/or maintenance. Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, repairing, maintaining and servicing machines, equipment or systems. These activities include lubricating, cleaning, unjamming and making adjustments or tool changes.

Setting up. Any work performed to prepare a machine, equipment or system to perform its normal production operation.

Sewered toilet facility. A fixture maintained for the purpose of urination and defecation that is connected to a sanitary sewer, septic tank, holding tank (bilge), or on-site sewage disposal treatment facility and that is flushed with water.

Ship's systems. Machines, equipment and systems that are a permanent or inherent part of a vessel. Such systems include, but are not limited to, systems that ensure the vessel's operational capability, such as propulsion, navigation, radar, electrical, water, steering, ballast, structural systems and systems to care for the crew. Ship's systems do not include inherently general industry operations onboard vessels such as fish processing equipment.

Tagout. The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout device. A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Vehicle safety equipment. Those systems and devices installed on a motor vehicle for the purposes of effecting the safe operation of the vehicle such as safety belts, airbags, headlights, tail lights, emergency hazard lights, windshield wipers, brakes, horn, mirrors, windshields and other windows and locks.

Vermin. Includes insects, birds and other animals, such as rodents and feral cats, which may create safety and health hazards for employees.

Walking and working surfaces. Any surface on or through which employees gain access to or perform job tasks. Walking and working surfaces also include any surface upon or through which employees are required or allowed to walk or work in the workplace. Walking and working surfaces include, but are not limited to, work areas, accessways, aisles, exits, gangways, ladders, ramps, stairs, steps and walkways.

Subpart J—[Amended]

8. In § 1915.162, paragraph (a)(1) is revised as follows:

§ 1915.162 Ship's boilers.

(a) * * *

(1) The employer shall ensure that the isolation and shutoff valves connecting the dead boiler with the live system or systems are secured, blanked and locked or tagged, in accordance with § 1915.89 Control of Hazardous Energy (Lockout/Tagout), indicating that employees are working on the boiler. This lock or tag shall not be removed nor the valves unblanked until it is determined that this may be done without creating a hazard to the employees working on the boiler, or until the work on the boiler is completed. Where valves are welded instead of bolted, at least two isolation and shutoff valves connecting the dead boiler with the live system or systems shall be secured and locked or tagged, in accordance with § 1915.89 Control of Hazardous Energy (Lockout/Tagout).

* * * * *

9. In § 1915.163, paragraph (a)(1) is revised to read as follows:

§ 1915.163 Ship's Piping Systems.

(a) * * *

(1) The employer shall ensure that the isolation and shutoff valves connecting the dead system with the live system or systems are secured, blanked and locked or tagged, in accordance with § 1915.89 Control of Hazardous Energy (Lockout/Tagout), indicating that employees are working on the systems. The lock or tag shall not be removed or the valves unblanked until it is determined that this may be done without creating a hazard to the employees working on the system, or until the work on the system is completed. Where valves are welded instead of bolted, at least two isolation and shutoff valves connecting the dead system with the live system or systems shall be secured, locked, or tagged, in accordance with § 1915.89.

* * * * *

10. In § 1915.164, paragraph (a)(2) is revised to read as follows:

§ 1915.164 Ship's propulsion machinery.

(a) * * *

(1) * * *

(2) If the jacking gear is steam driven, the employer shall ensure that the stop valves to the jacking gear are secured and locked or tagged in accordance with § 1915.89 Control of Hazardous Energy (Lockout/Tagout).

(3) If the jacking gear is electrically driven, the employer shall ensure that the circuit controlling the jacking gear is deenergized by tripping the circuit breaker, opening the switch or removing the fuse, whichever is appropriate and locked or tagged in accordance with § 1915.89.

Subpart I—[Amended]

11. In § 1915.181, paragraph (c) is revised to read as follows:

§ 1915.181 Electrical circuits and distribution boards.

* * * * *

(c) The employer shall ensure that deenergizing the circuit is accomplished by opening the circuit breaker, opening the switch, or removing the fuse, whichever method is appropriate. The circuit breaker, switch, or fuse location shall be locked out or tagged in accordance with § 1915.89 Control of Hazardous Energy (Lockout/Tagout). Such locks or tags shall not be removed nor the circuit energized until it is determined definitely that the work on the circuit has been completed.

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