(i) Materials of construction;
(ii) Piping and instrument diagrams (P&ID’s);
(iii) Electrical classification;
(iv) Relief system design and design basis;
(v) Ventilation system design;
(vi) Design codes and standards employed;
(vii) Material and energy balances for processes built after June 21, 1999; and
(viii) Safety systems (e.g. interlocks, detection or suppression systems).

(2) The owner or operator shall document that equipment complies with recognized and generally accepted good engineering practices.

(3) For existing equipment designed and constructed in accordance with codes, standards, or practices that are no longer in general use, the owner or operator shall determine and document that the equipment is designed, maintained, inspected, tested, and operating in a safe manner.

§ 68.67 Process hazard analysis.

(a) The owner or operator shall perform an initial process hazard analysis (hazard evaluation) on processes covered by this part. The process hazard analysis shall be appropriate to the complexity of the process and shall identify, evaluate, and control the hazards involved in the process. The owner or operator shall determine and document the priority order for conducting process hazard analyses based on a rationale which includes such considerations as extent of the process hazards, number of potentially affected employees, age of the process, and operating history of the process. The process hazard analysis shall be conducted as soon as possible, but not later than June 21, 1999. Process hazards analyses completed to comply with 29 CFR 1910.119(e) are acceptable as initial process hazards analyses. These process hazard analyses shall be updated and revalidated, based on their completion date.

(b) The owner or operator shall use one or more of the following methodologies that are appropriate to determine and evaluate the hazards of the process being analyzed.

(1) What-If;
(2) Checklist;
(3) What-If/Checklist;
(4) Hazard and Operability Study (HAZOP);
(5) Failure Mode and Effects Analysis (FMEA);
(6) Fault Tree Analysis; or
(7) An appropriate equivalent methodology.

(c) The process hazard analysis shall address:

(1) The hazards of the process;
(2) The identification of any previous incident which had a likely potential for catastrophic consequences.

(3) Engineering and administrative controls applicable to the hazards and their interrelationships such as appropriate application of detection methodologies to provide early warning of releases. (Acceptable detection methods might include process monitoring and control instrumentation with alarms, and detection hardware such as hydrocarbon sensors.);

(4) Consequences of failure of engineering and administrative controls;

(5) Stationary source siting;

(6) Human factors; and

(7) A qualitative evaluation of a range of the possible safety and health effects of failure of controls.

(d) The process hazard analysis shall be performed by a team with expertise in engineering and process operations, and the team shall include at least one employee who has experience and knowledge specific to the process being evaluated. Also, one member of the team must be knowledgeable in the specific process hazard analysis methodology being used.

(e) The owner or operator shall establish a system to promptly address the team’s findings and recommendations; assure that the recommendations are resolved in a timely manner and that the resolution is documented; document what actions are to be taken; complete actions as soon as possible; develop a written schedule of when these actions are to be completed; communicate the actions to operating, maintenance and other employees whose work assignments are in the process and who may be affected by the recommendations or actions.

(f) At least every five (5) years after the completion of the initial process hazard analysis, the process hazard
analysis shall be updated and revali-
dated by a team meeting the require-
ments in paragraph (d) of this section,
to assure that the process hazard anal-
ysis is consistent with the current
process. Updated and revalidated proc-
ess hazard analyses completed to com-
ply with 29 CFR 1910.119(e) are accept-
able to meet the requirements of this
paragraph.

(g) The owner or operator shall re-
tain process hazards analyses and up-
dates or revalidations for each process
covered by this section, as well as the
documented resolution of recommenda-
tions described in paragraph (e) of this
section for the life of the process.

§ 68.69 Operating procedures.

(a) The owner or operator shall de-
telop and implement written operating
procedures that provide clear instruc-
tions for safely conducting activities
involved in each covered process con-
sistent with the process safety infor-
mation and shall address at least the
following elements.

(1) Steps for each operating phase:
   (i) Initial startup;
   (ii) Normal operations;
   (iii) Temporary operations;
   (iv) Emergency shutdown including
       the conditions under which emergency
       shutdown is required, and the assign-
       ment of shutdown responsibility to
       qualified operators to ensure that
       emergency shutdown is executed in a
       safe and timely manner;
   (v) Emergency operations;
   (vi) Normal shutdown; and,
   (vii) Startup following a turnaround,
or after an emergency shutdown.

(2) Operating limits:
   (i) Consequences of deviation; and
   (ii) Steps required to correct or avoid
       deviation.

(3) Safety and health considerations:
   (i) Properties of, and hazards pre-
       sented by, the chemicals used in the
       process;
   (ii) Precautions necessary to prevent
       exposure, including engineering con-
       trols, administrative controls, and per-
       sonal protective equipment;
   (iii) Control measures to be taken if
       physical contact or airborne exposure
       occurs;
   (iv) Quality control for raw materials
       and control of hazardous chemical in-
       ventory levels; and,
   (v) Any special or unique hazards.

(4) Safety systems and their func-
tions.

(b) Operating procedures shall be
readily accessible to employees who
work in or maintain a process.

(c) The operating procedures shall be
reviewed as often as necessary to as-
sure that they reflect current oper-
ating practice, including changes that
result from changes in process chemi-
cals, technology, and equipment, and
changes to stationary sources. The
owner or operator shall certify annu-
ally that these operating procedures
are current and accurate.

(d) The owner or operator shall de-
telop and implement safe work prac-
tices to provide for the control of haz-
ards during operations such as lockout/
tagout; confined space entry; opening
process equipment or piping; and con-
trol over entrance into a stationary
source by maintenance, contractor,
laboratory, or other support personnel.
These safe work practices shall apply
to employees and contractor employ-
ees.

§ 68.71 Training.

(a) Initial training. (1) Each employee
presently involved in operating a proc-
cess, and each employee before being in-
volved in operating a newly assigned
process, shall be trained in an overview
of the process and in the operating pro-
cedures as specified in §68.69. The
training shall include emphasis on the
specific safety and health hazards,
emergency operations including shut-
down, and safe work practices applica-
tble to the employee’s job tasks.

(2) In lieu of initial training for those
employees already involved in operat-
ing a process on June 21, 1999 an
owner or operator may certify in writ-
ing that the employee has the required
knowledge, skills, and abilities to safe-
ly carry out the duties and responsibil-
ities as specified in the operating pro-
cedures.

(b) Refresher training. Refresher train-
ing shall be provided at least every
three years, and more often if nec-
essary, to each employee involved in
operating a process to assure that the