

§ 370.41

Example: On your worksheet you have marked an X in the Fire hazard column for acetone and butane. You noted that these are kept in steel drums in Room C of the Main Building, and in pressurized cylinders in Storage Shed 13, respectively. You could enter Main Building and Storage Shed 13 as the General Locations of your fire hazards. However, you choose to attach a site plan and list coordinates. Check the Site Plan box at the top of the column and enter site coordinates for the Main Building and Storage Shed 13 under General Locations.

If you need more space to list locations, attach an additional Tier One form and continue your list on the proper line. Number all pages.

40 CFR Ch. I (7-1-08 Edition)

Certification

Instructions for this section are included on page one of these instructions.

[55 FR 30646, July 26, 1990]

§ 370.41 Tier II emergency and hazardous chemical inventory form.

(a) The form set out in paragraph (b) of this section shall be completed and submitted as required in § 370.25 of this part. In lieu of the form set out in paragraph (b) of this section, the facility owner or operator may submit a State or local form that contains identical content.

(b) Tier II Emergency and Hazardous Chemical Inventory Form.

Revised June 1990 Page _____ of _____ pages Form Approved OMB No. 2050-0072

<p>Tier Two EMERGENCY AND HAZARDOUS CHEMICALS INVENTORY Specification by Chemical</p> <p>Facility Identification Name _____ Street _____ City _____ State _____ Zip _____ SIC Code _____ DUNS and NUMBER _____ D# _____ FOR OFFICIAL USE ONLY Date Received _____</p>	<p>Owner/Operator Name Name _____ Phone _____ Mkt Address _____ Emergency Contact Name _____ Title _____ Phone _____ 24 Hr. Phone _____ Name _____ Title _____ Phone _____ 24 Hr. Phone _____</p>	<p>Reporting Period From January 1 to December 31, 19 _____</p>	
<p>Important: Read all instructions before completing form.</p>			
<p>Chemical Description</p> <p>CAS _____ Trade Secret <input type="checkbox"/></p> <p>Chem. Name _____</p> <p>Check all that apply: <input type="checkbox"/> Pure <input type="checkbox"/> Mix <input type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas <input type="checkbox"/> EHS</p> <p>EHS Name _____</p>	<p>Physical and Health Hazards (check all that apply)</p> <p>Flam. <input type="checkbox"/> Sudden Release of Pressure <input type="checkbox"/> Reactivity <input type="checkbox"/> Immediate (acute) <input type="checkbox"/> Delayed (chronic) <input type="checkbox"/></p>	<p>Inventory</p> <p>Max. Daily Amount (code) _____ Avg. Daily Amount (code) _____ No. of Days On-site (days) _____</p>	<p>Storage Codes and Locations (Non-Confidential)</p> <p>Container _____ Temperature _____ Pressure _____</p>
<p>CAS _____ Trade Secret <input type="checkbox"/></p> <p>Chem. Name _____</p> <p>Check all that apply: <input type="checkbox"/> Pure <input type="checkbox"/> Mix <input type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas <input type="checkbox"/> EHS</p> <p>EHS Name _____</p>	<p>Flam. <input type="checkbox"/> Sudden Release of Pressure <input type="checkbox"/> Reactivity <input type="checkbox"/> Immediate (acute) <input type="checkbox"/> Delayed (chronic) <input type="checkbox"/></p>	<p>Max. Daily Amount (code) _____ Avg. Daily Amount (code) _____ No. of Days On-site (days) _____</p>	<p>Container _____ Temperature _____ Pressure _____</p>
<p>CAS _____ Trade Secret <input type="checkbox"/></p> <p>Chem. Name _____</p> <p>Check all that apply: <input type="checkbox"/> Pure <input type="checkbox"/> Mix <input type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas <input type="checkbox"/> EHS</p> <p>EHS Name _____</p>	<p>Flam. <input type="checkbox"/> Sudden Release of Pressure <input type="checkbox"/> Reactivity <input type="checkbox"/> Immediate (acute) <input type="checkbox"/> Delayed (chronic) <input type="checkbox"/></p>	<p>Max. Daily Amount (code) _____ Avg. Daily Amount (code) _____ No. of Days On-site (days) _____</p>	<p>Container _____ Temperature _____ Pressure _____</p>
<p>Certification: (Read and sign after completing all sections) I certify under penalty of law that I have personally examined and am familiar with the information submitted in pages one through _____ and that based on my inquiry of those individuals responsible for obtaining the information, I believe that the information is true, accurate, and complete.</p>			
<p>Name and official title of owner/operator OR owner/operator's authorized representative _____ Signature _____</p>		<p>Date signed _____</p>	
<p>Optional Attachments</p> <p><input type="checkbox"/> I have attached a site plan <input type="checkbox"/> I have attached a description of the container abbreviations <input type="checkbox"/> I have attached a description of dikes and other safeguard measures</p>			

Page _____ of _____ Pages
Form Approved OMB No. 2050-0072

Tier Two EMERGENCY AND HAZARDOUS CHEMICAL INVENTORY		Facility Identification		Owner/Operator Name		
Specific Information by Chemical		Name _____ Street _____ City _____ State _____ Zip _____ County _____	Name _____ Phone (____) _____		Name _____ Mail Address _____	
SC Code _____		City _____ State _____ Zip _____ County _____		Emergency Contact		
D # _____ FOR OFFICIAL USE ONLY		Date Received _____		Name _____ Phone (____) _____ Title _____		
Date Received _____		Reporting Period From January 1 to December 31, 19 _____		Name _____ Phone (____) _____ Title _____		

Important: Read all instructions before completing form.

Confidential Location Information Sheet		Storage Codes and Locations (Confidential)		Optional	
CAS # _____ Chem. Name _____		Storage Locations		Temperature	
CAS # _____ Chem. Name _____				Pressure	
CAS # _____ Chem. Name _____				Container Type	

Certification (Read and sign after completing all sections)
I certify under penalty of law that I have personally examined and am familiar with the information submitted in pages one through _____ and that based on my inquiry of those individuals responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.
Name and official title of owner/operator OR owner/operator's authorized representative _____ Signature _____ Date typed _____

Optional Attachments
 I have attached a site plan.
 I have attached a list of site hazardous materials.
 I have attached a description of site and other subsequent measures.

TIER TWO INSTRUCTIONS

General Information

Submission of this Tier Two form (when requested) is required by Title III of the Superfund Amendments and Reauthorization Act of 1986, Section

312, Public Law 99-499, codified at 42 U.S.C. Section 11022. The purpose of this Tier Two form is to provide State and local officials and the public with specific information on hazardous chemicals present at your facility during the past year.

Environmental Protection Agency

§ 370.41

Certification

The owner or operator or the officially designated representative of the owner or operator must certify that all information included in the Tier Two submission is true, accurate, and complete. On the first page of the Tier Two report, enter your full name and official title. Sign your name and enter the current date. Also, enter the total number of pages included in the Confidential and Non-Confidential Information Sheets as well as all attachments. An original signature is required on at least the first page of the submission. Submissions to the SERC, LEPC, and fire department must each contain an original signature on at least the first page. Subsequent pages must contain either an original signature, a photocopy of the original signature, or a signature stamp. Each page must contain the date on which the original signature was affixed to the first page of the submission and the total number of pages in the submission.

You Must Provide All Information Requested on This Form To Fulfill Tier Two Reporting Requirements

This form may also be used as a worksheet for completing the Tier One form or may be submitted in place of the Tier One form.

Who Must Submit This Form

Section 312 of Title III requires that the owner or operator of a facility submit this Tier Two form if so requested by a State emergency response commission, a local emergency planning committee, or a fire department with jurisdiction over the facility.

This request may apply to the owner or operator of any facility that is required, under regulations implementing the Occupational Safety and Health Act of 1970, to prepare or have available a Material Safety Data Sheet (MSDS) for a hazardous chemical present at the facility. MSDS requirements are specified in the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, found in Title 29 of the Code of Federal Regulations at § 1910.1200.

This form does not have to be submitted if all of the chemicals located at your facility are excluded under Section 311(e) of Title III.

What Chemicals are Included

If you are submitting Tier Two forms in lieu of Tier One, you must report the required information on this Tier Two form for each hazardous chemical present at your facility in quantities equal to or greater than established threshold amounts (discussed below), unless the chemicals are excluded under Section 311(e) of Title III. Hazardous chemicals are any substance for which your facility must maintain an MSDS under OSHA's Hazard Communication Standard.

If you elect to submit Tier One rather than Tier Two, you may still be required to submit Tier Two information upon request.

What Chemicals are Excluded

Section 311(e) of Title III excludes the following substances:

(i) Any food, food additive, color additive, drug, or cosmetic regulated by the Food and Drug Administration;

(ii) Any substance present as a solid in any manufactured item to the extent exposure to the substance does not occur under normal conditions of use;

(iii) Any substance to the extent it is used for personal, family, or household purposes, or is present in the same form and concentration as a product packaged for distribution and use by the general public;

(iv) Any substance to the extent it is used in a research laboratory or a hospital or other medical facility under the direct supervision of a technically qualified individual;

(v) Any substance to the extent it is used in routine agricultural operations or is a fertilizer held for sale by a retailer to the ultimate customer.

OSHA regulations, § 1910.1200(b), stipulate exemptions from the requirement to prepare or have available an MSDS.

Reporting Thresholds

Minimum thresholds have been established for Tier One/Tier Two reporting under Title III, Section 312. These thresholds are as follows:

§ 370.41

40 CFR Ch. I (7-1-08 Edition)

For Extremely Hazardous Substances (EHSs) designated under section 302 of Title III, the reporting threshold is 500 pounds (or 227 kg.) or the threshold planning quantity (TPQ), whichever is lower;

For all other hazardous chemicals for which facilities are required to have or prepare an MSDS, the minimum reporting threshold is 10,000 pounds (or 4,540 kg.).

You need to report hazardous chemicals that were present at your facility at any time during the previous calendar year at levels that equal or exceed these thresholds. For instructions on threshold determinations for components of mixtures, see "What About Mixtures?" on page 2 of these instructions.

A requesting official may limit the responses required under Tier Two by specifying particular chemicals or groups of chemicals. Such requests apply to hazardous chemicals regardless of established thresholds.

INSTRUCTIONS

*Please read these instructions carefully.
Print or Type all Responses*

When to Submit This Form

Owners or operators of facilities that have hazardous chemicals on hand in quantities equal to or greater than set threshold levels must submit either Tier One or Tier Two forms by March 1.

If you choose to submit Tier One, rather than Tier Two, be aware that you may have to submit Tier Two information later, upon request of an authorized official. You must submit the Tier Two form within 30 days of receipt of a written request.

Where To Submit This Form

Send either a completed Tier One form or Tier Two form(s) to each of the following organizations:

1. Your State Emergency Response Commission.
2. Your Local Emergency Planning Committee.
3. The fire department with jurisdiction over your facility.

If a Tier Two form is submitted in response to a request, send the completed form to the requesting agency.

Penalties

Any owner or operator who violates any Tier Two reporting requirements shall be liable to the United States for a civil penalty of up to \$25,000 for each such violation. Each day a violation continues shall constitute a separate violation.

If your Tier Two responses require more than one page use additional forms and fill in the page number at the top of the form.

Reporting Period

Enter the appropriate calendar year, beginning January 1 and ending December 31.

Facility Identification

Enter the full name of your facility (and company identifier where appropriate).

Enter the full street address or state road. If a street address is not available, enter other appropriate identifiers that describe the physical location of your facility (e.g., longitude and latitude). Include city, county, state, and zip code.

Enter the primary Standard Industrial Classification (SIC) code and the Dun & Bradstreet number for your facility. The financial officer of your facility should be able to provide the Dun & Bradstreet number. If your firm does not have this information, contact the State or regional office of Dun & Bradstreet to obtain your facility number or have one assigned.

Owner/Operator

Enter the owner's or operator's full name, mailing address, and phone number.

Emergency Contact

Enter the name, title, and work phone number at least one local person or office who can act as a referral if emergency responders need assistance in responding to a chemical accident at the facility.

Provide an emergency phone number where such emergency information will be available 24 hours a day, every day.

Environmental Protection Agency

§ 370.41

The requirement is mandatory. The facility must make some arrangement to ensure a 24 hour contact is available.

Identical Information

Check the box indicating identical information, located below the emergency contacts on the Tier Two form, if the current chemical information being reported is identical to that submitted last year. Chemical descriptions, hazards, amounts, and locations must be provided in this year's form, even if the information is identical to that submitted last year.

Chemical Information: Description, Hazards, Amounts, and Locations

The main section of the Tier Two form requires specific information on amounts and locations of hazardous chemicals, as defined in the OSHA Hazard Communication Standard.

If you choose to indicate that all of the information on a specific hazardous chemical is identical to that submitted last year, check the appropriate optional box provided at the right side of the storage codes and locations on the Tier Two form. Chemical descriptions, hazards, amounts, and locations must be provided even if the information is identical to that submitted last year.

- What units should I use?

Calculate all amounts as *weight in pounds*. To convert gas or liquid volume to weight in pounds, multiply by an appropriate density factor.

- What about mixtures?

If a chemical is part of a mixture, *you have the option* of reporting either the weight of the entire mixture or only the portion of the mixture that is a particular hazardous chemical (e.g., if a hazardous solution weighs 100 lbs. but is composed of only 5% of a particular hazardous chemical, you can indicate either 100 lbs. of the mixture or 5 lbs. of the chemical).

The option used for each mixture must be consistent with the option used in your Section 311 reporting.

Because EHSs are important to Section 303 planning, EHSs have lower thresholds. The amount of an EHS at a facility (both pure EHS substances and EHSs in mixtures) must be aggregated and purposes of threshold determination. It is suggested that the aggrega-

tion calculation be done as a first step in making the threshold determination. Once you determine whether a threshold for an EHS has been reached, you should report either the total weight of the EHS at your facility, or the weight of each mixture containing the EHS.

Chemical Description

1. Enter the Chemical Abstract Service registry number (CAS). For mixtures, enter the CAS number of the mixture as a whole if it has been assigned a number distinct from its constituents. For a mixture that has no CAS number, leave this item blank or report the CAS numbers of as many constituent chemicals as possible.

If you are withholding the name of a chemical in accordance with criteria specified in Title III, Section 322, enter the generic class or category that is structurally descriptive of the chemical (e.g., list toluene diisocyanate as organic isocyanate) and check the box marked Trade Secret. Trade secret information should be submitted to EPA and must include a substantiation. Please refer to EPA's final regulation on trade secrecy (53 FR 28772, July 29, 1988) for detailed information on how to submit trade secrecy claims.

2. Enter the chemical name or common name of each hazardous chemical.

3. Check box for ALL applicable descriptors: pure or mixture; and solid, liquid, or gas; and whether the chemical is or contains an EHS.

4. If the chemical is a mixture containing an EHS, enter the chemical name of each EHS in the mixture.

Example: You have pure chlorine as on hand, as well as two mixtures that contain liquid chlorine. You write "chlorine" and enter the CAS number. Then you check "pure" and "mix"—as well as "liquid" and "gas".

Physical and Health Hazards

For each chemical you have listed, check all the physical and health hazard boxes that apply. These hazard categories are defined in 40 CFR 370.2. The two health hazard categories and three physical hazard categories are a consolidation of the 23 hazard categories defined in the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

§ 370.41

40 CFR Ch. I (7-1-08 Edition)

HAZARD CATEGORY COMPENSATION FOR REPORTING UNDER SECTIONS 311 AND 312

EPA's hazard categories	OSHA's hazard categories
Fire Hazard	Flammable Combustion Liquid Pyrophoric Oxidizer
Sudden Release of Pressure	Explosive Compressed Gas
Reactive	Unstable Reactive Organic Peroxide Water Reactive
Immediate (Acute) Health Hazards.	Highly Toxic Toxic Irritant Sensitizer Corrosive Other hazardous chemicals with an adverse effect with short term exposure
Delayed (Chronic) Health Hazard.	Carcinogens Other hazardous chemicals with an adverse effect with long term exposure

Maximum Amount

1. For each hazardous chemical, estimate the greatest amount present at your facility on any single day during the reporting period.
2. Find the appropriate range value code in table I.
3. Enter this range value as the Maximum Amount.

TABLE I—REPORTING RANGES

Range value	Weight range in pounds	
	From	To
01	0	99
02	100	999
03	1,000	9,999
04	10,000	99,999
05	100,000	999,999
06	1,000,000	9,999,999
07	10,000,000	49,999,999
08	50,000,000	99,999,999
09	100,000,000	499,999,999
10	500,000,000	999,999,999
11	1 billion	higher than 1 billion

If you are using this form as a worksheet for completing Tier One, enter the actual weight in pounds in the shaded space below the response blocks. Do this for both Maximum Amount and Average Daily Amount.

Example: You received one large shipment of a solvent mixture last year. The shipment filled five 5,000-gallon storage tanks. You know that the solvent contains 10% benzene, which is a hazardous chemical.

You figure that 10% of 25,000 gallons is 2,500 gallons. You also know that the

density of benzene is 7.29 pounds per gallon, so you multiply 2,500 gallons by 7.29 pounds per gallon to get a weight of 18,225 pounds.

Then you look at table I and find that the range value 04 corresponds to 18,225. You enter 04 as the Maximum Amount.

(If you are using the form as a worksheet for completing a Tier One form, you should write 18,255 in the shaded area.)

Average Daily Amount

1. For each hazardous chemical, estimate the average weight in pounds that was present at your facility during the year.

To do this, total all daily weights and divide by the number of days the chemical was present on the site.

2. Find the appropriate range value in table I.
3. Enter this range value as the Average Daily Amount.

Example: The 25,000-gallon shipment of solvent you received last year was gradually used up and completely gone in 315 days. The sum of the daily volume levels in the tank is 4,536,000 gallons. By dividing 4,536,000 gallons by 315 days on-site, you calculate an average daily amount of 14,400 gallons.

You already know that the solvent contains 10% benzene, which is a hazardous chemical. Since 10% of 14,400 is 1,440, you figure that you had an average of 1,440 gallons of benzene. You also know that the density of benzene is 7.29 pounds per gallon, so you multiply 1,440 by 7.29 to get a weight of 10,500 pounds.

Then you look at table I and find that the range value 04 corresponds to 10,500. You enter 04 as the Average Daily Amount.

(If you are using the form as a worksheet for completing a Tier One form, you should write 10,500 in the shaded area.)

Number of Days On-Site

Enter the number of days that the hazardous chemical was found on-site.

Example: The solvent composed of 10% benzene was present for 315 days at your facility. Enter 315 in the space provided.

Environmental Protection Agency

§ 370.41

Storage Codes and Storage Locations

List all non-confidential chemical locations in this column, along with storage types/conditions associated with each location. Please note that a particular chemical may be located in several places around the facility. Each row of boxes followed by a line represents a unique location for the same chemical.

Storage Codes: Indicate the types and conditions of storage present.

a. *Look at table II.* For each location, find the appropriate storage type and enter the corresponding code in the first box.

b. *Look at table III.* For each location, find the appropriate storage types for pressure and temperature conditions. Enter the applicable pressure code in the second box. Enter the applicable temperature code in the third box.

TABLE II—STORAGE TYPES

Codes	Types of storage
A	Above ground tank
B	Below ground tank
C	Tank inside building
D	Steel drum
E	Plastic or non-metallic drum
F	Can
G	Carboy
H	Silo
I	Fiber drum
J	Bag
K	Box
L	Cylinder
M	Glass bottles or jugs
N	Plastic bottles or jugs
O	Tote bin
P	Tank wagon
Q	Rail car
R	Other

TABLE III—TEMPERATURE AND PRESSURE CONDITIONS

Codes	Storage conditions
	(Pressure)
1	Ambient pressure
2	Greater than ambient pressure
3	Less than ambient pressure
	(Temperature)
4	Ambient temperature
5	Greater than ambient temperature
6	Less than ambient temperature but not cryogenic
7	Cryogenic conditions

Example: The benzene in the main building is kept in a tank inside the building, at ambient pressure and less than ambient temperature.

Table II shows you that the code for a tank inside a building is C. Table III shows you that the code for ambient pressure is 1, and the code for less than ambient temperature is 6.

You enter: C 1 6

Storage Locations: Provide a brief description of the precise location of the chemical, so that emergency responders can locate the area easily. You may find it advantageous to provide the optional site plan or site coordinates as explained below.

For each chemical, indicate at a minimum the building or lot. Additionally, where practical, the room or area may be indicated. You may respond in narrative form with appropriate site coordinates or abbreviations.

If the chemical is present in more than one building, lot, or area location, continue your responses down the page as needed. If the chemical exists everywhere at the plant site simultaneously, you may report that the chemical is ubiquitous at the site.

Optional attachments: If you choose to attach one of the following, check the appropriate Attachments box at the bottom of the Tier Two form.

a. *A site plan* with site coordinates indicated for buildings, lots, areas, etc. throughout your facility.

b. *A list of site coordinate abbreviations* that correspond to buildings, lots, areas, etc. throughout your facility.

c. *A description of dikes and other safeguard measures* for storage locations throughout your facility.

Example: You have benzene in the main room of the main building, and in tank 2 in tank field 10. You attach a site plan with coordinates as follows: main building = G-2, tank field 10 = B-6. Fill in the Storage Location as follows:

B-6 [Tank 2] G-2 [Main room]

Confidential Information

Under Title III, Section 324, you may elect to withhold location information on a specific chemical from disclosure to the public. If you choose to do so:

- Enter the word “confidential” in the Non-Confidential Location section of the Tier Two form on the first line of the storage locations.

- On a separate Tier Two Confidential Location Information Sheet, enter the name and CAS number of each chemical for which you are keeping the location confidential.
- Enter the appropriate location and storage information, as described above for non-confidential locations.
- Attach the Tier Two Confidential Location Information Sheet to the Tier Two form. This separates confidential locations from other information that will be disclosed to the public.

Certification

Instructions for this section are included on page one of these instructions.

[55 FR 30650, July 26, 1990]

PART 372—TOXIC CHEMICAL RELEASE REPORTING: COMMUNITY RIGHT-TO-KNOW

Subpart A—General Provisions

- Sec.
- 372.1 Scope and purpose.
- 372.3 Definitions.
- 372.5 Persons subject to this part.
- 372.10 Recordkeeping.
- 372.18 Compliance and enforcement.

Subpart B—Reporting Requirements

- 372.22 Covered facilities for toxic chemical release reporting.
- 372.23 SIC and NAICS codes to which this Part applies.
- 372.25 Thresholds for reporting.
- 372.27 Alternate thresholds and certifications.
- 372.28 Lower thresholds for chemicals of special concern.
- 372.30 Reporting requirements and schedule for reporting.
- 372.38 Exemptions.

Subpart C—Supplier Notification Requirements

- 372.45 Notification about toxic chemicals.

Subpart D—Specific Toxic Chemical Listings

- 372.65 Chemicals and chemical categories to which this part applies.

Subpart E—Forms and Instructions

- 372.85 Toxic chemical release reporting form and instructions.

- 372.95 Alternate threshold certifications and instructions.

AUTHORITY: 42 U.S.C. 11023 and 11048.

SOURCE: 53 FR 4525, Feb. 16, 1988, unless otherwise noted.

Subpart A—General Provisions

§ 372.1 Scope and purpose.

This part sets forth requirements for the submission of information relating to the release of toxic chemicals under section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986. The information collected under this part is intended to inform the general public and the communities surrounding covered facilities about releases of toxic chemicals, to assist research, to aid in the development of regulations, guidelines, and standards, and for other purposes. This part also sets forth requirements for suppliers to notify persons to whom they distribute mixtures or trade name products containing toxic chemicals that they contain such chemicals.

§ 372.3 Definitions.

Terms defined in sections 313(b)(1)(c) and 329 of Title III and not explicitly defined herein are used with the meaning given in Title III. For the purpose of this part:

Acts means Title III.

Article means a manufactured item: (1) Which is formed to a specific shape or design during manufacture; (2) which has end use functions dependent in whole or in part upon its shape or design during end use; and (3) which does not release a toxic chemical under normal conditions of processing or use of that item at the facility or establishments.

Beneficiation means the preparation of ores to regulate the size (including crushing and grinding) of the product, to remove unwanted constituents, or to improve the quality, purity, or grade of a desired product.

Boiler means an enclosed device using controlled flame combustion and having the following characteristics:

- (1)(i) The unit must have physical provisions for recovering and exporting thermal energy in the form of steam, heated fluids, or heated gases; and