

US EPA ARCHIVE DOCUMENT

CHAPTER 3: FIVE-YEAR ACCIDENT HISTORY

The five-year accident history involves an examination of the effects of any accidental releases of one or more of the regulated substances from a covered process in the five years prior to the submission of a Risk Management Plan (RMP). A five-year accident history must be completed for each covered process, including the processes in Program 1, and all accidental releases meeting specified criteria must be reported in the RMP for the process.

Note that a Program 1 process may have had an accidental release that must be included in the five-year accident history, even though the release does not disqualify the process from Program 1. The accident history criteria that make a process ineligible for Program 1 (certain offsite impacts) do not include other types of effects that require inclusion of a release in the five-year accident history (on-site impacts and more inclusive offsite impacts). For example, an accidental release may have led to worker injuries, but no other effects. This release would not bar the process from Program 1 (because the injuries were not offsite), but would need to be reported in the five-year accident history. Similarly, a release may have resulted in damage to foliage offsite (environmental damage), triggering reporting, but because the foliage was not part of an environmental receptor (e.g., national park or forest) it would not make the process ineligible for Program 1.

3.1 WHAT ACCIDENTS MUST BE REPORTED?

The five-year accident history covers only certain releases:

- The release must be from a covered process and involve a regulated substance held above its threshold quantity in the process.
- The release must have caused at least one of the following:
 - On-site deaths, injuries, or significant property damage (§68.42(a)); or
 - Known offsite deaths, injuries, property damage, environmental damage, evacuations, or sheltering in place (§68.42(a)).

If you have had a release of a regulated substance from a process where the regulated substance is held below its threshold quantity, you do not need to report that release even if the release caused one of the listed impacts or if the process is covered for some other substance. You may choose to report the release in the five-year accident history, but you are not required to do so.

3.2 WHAT DATA MUST BE PROVIDED?

The following information should be included in your accident history for every reported release:

Time. Indicate the time at which the release began.

Release duration. Indicate the approximate length of time of the release in minutes.

Chemical(s). Indicate the regulated substance(s) released. Use the name of the substance as listed in § 68.130 rather than a synonym (e.g., ethylene oxide rather than oxirane). If the release was of a flammable mixture, list the primary regulated substances in the mixture if feasible; if the contents of the mixture are uncertain, list it as a flammable mixture.

Quantity released. Estimate the amount of each substance released in pounds. The amount should be estimated to two significant digits, or as close to that as possible. For example, if you estimate that the release was between 850 and 900 pounds, provide a best guess. We realize that you may not know precise quantities. For flammable mixtures, you may report the quantity of the mixture, rather than that of the individual regulated substances.

Release event. Indicate which of the following release events best describes your accident. Check all that apply:

- ◆ *Gas Release.* A gas release is a release of the substance as a gas (rather than vaporized from a liquid). If you hold a gas liquefied under refrigeration, report the release as a liquid spill.
- ◆ *Liquid Spill/ Evaporation.* A liquid spill/evaporation is a release of the substance in a liquid state with subsequent vaporization.
- ◆ *Fire.* A fire is combustion producing light, flames, and heat.
- ◆ *Explosion.* An explosion is a rapid chemical reaction with the production of noise, heat, and violent expansion of gases.
- ◆ *Uncontrolled/Runaway Reaction.* A release event caused by an uncontrolled chemical reaction that generates excessive heat, pressure, or harmful reaction products. Such events may involve highly exothermic chemical reactions, self-reactive substances (e.g., substances that undergo polymerization), unstable, explosive, or spontaneously combustible substances, substances that react strongly with water or other contaminants, oxidizers, peroxide-forming substances, or other types of chemical reactions that generate harmful products or byproducts. This category of release event may often occur in conjunction with one of the previous categories. In such cases, be sure to check this category in addition to any other applicable release event category (e.g., explosion). The burning of ordinary flammable substances is not typically included in this category.

Release source. Indicate all that apply.

- ◆ *Storage Vessel.* A storage vessel is a container for storing or holding gas or liquid. Storage vessels include transportation containers being used for on-site storage.
- ◆ *Piping.* Piping refers to a system of tubular structures or pipes used to carry a fluid or gas.
- ◆ *Process Vessel.* A process vessel is a container in which substances under certain conditions (e.g., temperature, pressure) participate in a process (e.g., substances are manufactured, blended to form a mixture, reacted to convert them into some other final product or form, or heated to purify).
- ◆ *Transfer Hose.* A transfer hose is a tubular structure used to connect, often temporarily, two or more vessels.
- ◆ *Valve.* A valve is a device used to regulate the flow in piping systems or machinery. Relief valves and rupture disks open to release pressure in vessels.
- ◆ *Pump.* A pump is a device that raises, transfers, or compresses fluids or that attenuates gases by suction or pressure or both.
- ◆ *Joint.* The surface at which two or more mechanical components are united.
- ◆ *Other.* Specify other source of the release.

Weather conditions at time of event (if known). This information is important to those concerned with modeling the effects of accidents. Reliable information from those involved in the incident or from an on-site weather station is ideal. However, this rule does not require your facility to have a weather station. If you do not have an onsite weather station, use information from your local weather station, airport, or other source of meteorological data. To the extent possible, complete the following:

- ◆ *Wind Speed and Direction.* Wind speed is an estimate of how fast the wind is traveling. Indicate the speed in miles per hour. Wind direction is the direction from which the wind comes. For example, a wind that blows from east to west would be described as having an eastern wind direction. You may describe wind direction as a standard compass reading such as "Northeast" or "South-southwest."

You may also describe wind direction in degrees—with North as zero degrees and East as 90 degrees. Thus, northeast would represent 45 degrees and south-southwest would represent 202.5 degrees. Abbreviations for the wind direction such as NE (for northeast) and SSW (for south-southwest) are also acceptable.

- ◆ *Temperature.* The ambient temperature at the scene of the accident in degrees Fahrenheit. If you did not keep a record, you can use the high (for

daytime releases) or low (for nighttime releases) for the day of the release. Local papers publish these data.

- ◆ **Stability Class.** Depending on the amount of incoming solar radiation as well as other factors, the atmosphere may be more or less turbulent at any given time. Meteorologists have defined six atmospheric stability classes, each representing a different degree of turbulence in the atmosphere. When moderate to strong incoming solar radiation heats air near the ground, causing it to rise and generating large eddies, the atmosphere is considered unstable, or relatively turbulent. Unstable conditions are associated with stability classes A and B. When solar radiation is relatively weak, air near the surface has less of a tendency to rise and less turbulence develops. In this case, the atmosphere is considered stable or less turbulent with weak winds. The stability class is E or F. Stability classes D and C represent conditions of neutral stability or moderate turbulence respectively. Neutral conditions are associated with relatively strong wind speeds and moderate solar radiation. Exhibit 3-1 presents the stability classes associated with wind speeds, time of day, and cloud cover.
- ◆ **Precipitation Present.** Precipitation may take the form of hail, mist, rain, sleet, or snow. Indicate "yes" or "no" based on whether there was any precipitation at the time of the accident.
- ◆ **Unknown.** If you have no record for some or all of the weather data, indicate "unknown" for any missing item. We realize that you may not have weather data for accidents that occurred in the past. You should, however, collect these data for any future accidents.

**EXHIBIT 3-1
ATMOSPHERIC STABILITY CLASSES**

SURFACE WIND SPEED AT 10 METERS		DAY			NIGHT	
Meters per second	Miles per hour	Incoming Solar Radiation			Thinly Overcast or ≥ 4/8 low cloud	≤ 3/8 Cloud
		Strong*	Moderate	Slight**		
< 2	<4.5	A	A-B	B		
2-3	4.5-7	A-B	B	C	E	F
3-5	7-11	B	B-C	C	D	E
5-6	11-13	C	C-D	D	D	D
>6	>13	C	D	D	D	D

* Sun high in the sky with no clouds.

** Sun low in the sky with no clouds.

On-site impacts. Complete the following about on-site effects.

- ◆ **Deaths.** Indicate the number of on-site deaths that are attributed to the accident or mitigation activities. On-site deaths means the number of employees, contract employees, offsite responders, or others (e.g., visitors) who were killed by direct exposure to toxic concentrations, radiant heat, or overpressures from accidental releases or from indirect consequences of a vapor cloud explosion from an accidental release (e.g., flying glass, debris, other projectiles). You should list employee/contractor, offsite responder, and other on-site deaths separately.
- ◆ **Injuries.** An injury is any effect that results either from direct exposure to toxic concentrations, radiant heat, or overpressures from accidental releases or from indirect consequences of a vapor cloud explosion (e.g., flying glass, debris, other projectiles) from an accidental release and that requires medical treatment or hospitalization. You should list injuries to employees and contractors, offsite responders, and others separately.

Medical treatment means treatment, other than first aid, administered by a physician or registered professional personnel under standing orders from a physician.

Your Log of Work-Related Injuries and Illnesses (OSHA Form 300) and Injury and Illness Incident Report (OSHA Form 301) will help complete these items for employees.

- ◆ **Property Damage.** Estimate the value of the equipment or business structures (for your business alone) that were damaged by the accident or mitigation activities. Record the value in American dollars. Insurance claims may provide this information. Do **not** include any losses that you may have incurred as a result of business interruption.

Known offsite impacts. These are impacts that you know or could reasonably be expected to know of (e.g., from media reports or from reports to your facility) that occurred as a result of the accidental release. You are not required to conduct an additional investigation to determine offsite impacts.

Qs & As PROPERTY DAMAGE

Q. What level of offsite property damage triggers reporting?

A. Any level of known offsite property damage triggers inclusion of the accident in the five-year accident history. You are not required to conduct a survey to determine if such damage occurred, but if you know, or could reasonably be expected to know (e.g., because of reporting in the newspapers), that damage occurred, you must include the accident.

- ◆ *Deaths.* Indicate the number of offsite deaths that are attributable to the accident or mitigation activities. Offsite deaths means the number of community members who were killed by direct exposure to toxic concentrations, radiant heat, or overpressures from accidental releases or from indirect consequences of a vapor cloud explosion from an accidental release (e.g., flying glass, debris, other projectiles).
- ◆ *Injuries.* Indicate the number of injuries among community members. Injury means any effect that results either from direct exposure to toxic concentrations, radiant heat, or overpressures from accidental releases or from indirect consequences of a vapor cloud explosion from an accidental release (e.g., flying glass, debris, other projectiles) and that requires medical treatment or hospitalization.
- ◆ *Evacuated.* Estimate the number of members of the community who were evacuated to prevent exposure that might have resulted from the accident. A total count of the number of people evacuated is preferable to the number of houses evacuated. People who were ordered to move simply to improve access to the site for emergency vehicles are not considered to have been evacuated.
- ◆ *Sheltered.* Estimate the number of members of the community who were sheltered-in-place during the accident. Sheltering-in-place occurs when community members are ordered to remain inside their residence or place of work until the emergency is over to prevent exposure to the effects of the accidental release. Usually these orders are communicated by an emergency broadcast or similar method of mass notification by response agencies.
- ◆ *Environmental Damage.* Indicate whether any environmental damage occurred and specify the type. The damage to be reported is not limited to environmental receptors listed in the rule. Any damage to the environment (e.g., dead or injured animals, defoliation, water contamination) should be identified. You are **not**, however, required to conduct surveys to determine whether such impact occurred. Types of environmental damage include:
 - ▷ Fish or animal kills.
 - ▷ Lawn, shrub, or crop damage (minor defoliation).
 - ▷ Lawn, shrub, or crop damage (major defoliation).
 - ▷ Water contamination.
 - ▷ Other (specify).

Initiating event. Indicate the initiating event that was the immediate cause of the accident, if known. If you conducted an investigation of the release, you should have identified the initiating event.

- ◆ *Equipment Failure.* A device or piece of equipment failed or did not function as designed. For example, the vessel wall corroded or cracked.
- ◆ *Human Error.* An operator performed a task improperly, either by failing to take the necessary steps or by taking the wrong steps.
- ◆ *Weather Conditions.* Weather conditions, such as lightning, hail, ice storms, tornados, hurricanes, floods, or high winds, caused the accident.
- ◆ *Unknown.*

Contributing factors. These are factors that contributed to the accident, but were not the initiating event. If you conducted an investigation of the release, you may have identified factors that led to the initiating event or contributed to the severity of the release. Indicate all that apply.

- ◆ *Equipment Failure.* A device or piece of equipment failed to function as designed, thereby leading to or worsening the accidental release.
- ◆ *Human error.* An operator performed an operation improperly or made a mistake leading to or worsening the accidental release.
- ◆ *Improper Procedures.* The procedure did not reflect the proper method of operation, the procedure omitted steps that affected the accident, or the procedure was written in a manner that allowed for misinterpretation of the instructions.
- ◆ *Overpressurization.* The process was operated at pressures exceeding the design working pressure.
- ◆ *Upset Condition.* Incorrect process conditions (e.g., increased temperature or pressure) contributed to the release.
- ◆ *By-pass Condition.* A failure occurred in a pipe, channel, or valve that diverts fluid flow from the main pathway when design process or storage conditions are exceeded (e.g., overpressure). By-pass conditions may be designed to release the substance to restore acceptable process or storage conditions and prevent more severe consequences (e.g., explosion).
- ◆ *Maintenance Activity/ Inactivity.* A failure occurred because of maintenance activity or inactivity. For example, the storage racks remained unpainted for so long that corrosion caused the metal to fail.

- ◆ *Process Design.* A failure resulted from an inherent flaw in the design of the process (e.g., pressure needed to make the product exceeds the design pressure of the vessel).
- ◆ *Unsuitable Equipment.* The equipment used was incorrect for the process. For example, the forklift was too large for the corridors.
- ◆ *Unusual Weather Conditions.* Weather conditions, such as lightning, hail, ice storms, tornados, hurricanes, floods, or high winds contributed to the accident.
- ◆ *Management Error.* A failure occurred because management did not exercise its managerial control to prevent the accident from occurring. This is usually used to describe faulty procedures, inadequate training, inadequate oversight, or failure to follow existing administrative procedures.

Whether offsite responders were notified. If known, indicate whether response agencies (e.g., police, fire, medical services) were contacted.

Changes introduced as a result of the accident. Indicate any measures that you have taken at the facility to prevent recurrence of the accident. Indicate all that apply.

- ◆ *Improved/ Upgraded Equipment.* A device or piece of equipment that did not function as designed was repaired or replaced.
- ◆ *Revised Maintenance.* Maintenance procedures were clarified or changed to ensure appropriate and timely maintenance including inspection and testing (e.g., increasing the frequency of inspection or adding a testing method).
- ◆ *Revised Training.* Training programs were clarified or changed to ensure that employees and contract employees are aware of and are practicing correct safety and administrative procedures.
- ◆ *Revised Operating Procedures.* Operating procedures were clarified or changed to ensure that employees and contract employees are trained on appropriate operating procedures.
- ◆ *New Process Controls.* New process designs and controls were installed to correct problems and prevent recurrence of an accidental release.
- ◆ *New Mitigation Systems.* New mitigation systems were initiated to limit the severity of accidental releases.
- ◆ *Revised Emergency Response Plan.* The emergency response plan was revised.
- ◆ *Changed Process.* Process was altered to reduce the risk (e.g., process chemistry was changed).

- ◆ *Reduced Inventory.* Inventory was reduced at the facility to reduce the potential release quantities and the magnitude of the hazard.
- ◆ *Other.*
- ◆ *None.* No changes initiated at facility as a result of the accident (e.g., because none were necessary or technically feasible). There may be some accidents that could not have been prevented because they were caused by events that are too rare to merit additional steps. For example, if a tornado hit your facility and you are located in an area where tornados are very rare, it may not be reasonable to design a "tornado proof" process even if it is technically feasible.

3.3 WHEN MUST ACCIDENTS BE REPORTED?

When an RMP is first submitted to EPA, it must contain a five-year accident history including all of the accidents that meet the reporting criteria discussed above and that occurred within five years of the date of the RMP is submitted. When an RMP is updated as required by section 68.190 of the rule, it must contain an updated five-year accident history including all of the accidents that meet the reporting criteria and that occurred within five years of the date on which the updated RMP is submitted. In addition, on April 9, 2004, EPA published a final rule that amended the accident history reporting requirement (and certain other provisions of the risk management program). Beginning on that date, if an accident occurs that meets the reporting criteria, it must be reported in the RMP five-year accident history within six months of the accident, as required by section 68.195 of the rule, unless it is included in an RMP update prior to that time. EPA took this action to require more timely reporting of significant accidents in RMPs so that government, industry and the public would be more quickly alerted to the possibility of similar accidents occurring elsewhere.

3.4 OTHER ACCIDENT REPORTING REQUIREMENTS

You should already have much of the data required for the five-year accident history because of the reporting requirements under the Comprehensive Emergency Response, Compensation, and Liability Act (CERCLA), EPCRA, and OSHA (e.g., log of work-related injuries and illnesses). This information should minimize the effort necessary to complete the accident history.

At the same time, some of the information originally reported to response agencies may have been incomplete or inaccurate because it was reported during the release when a full assessment was not possible. It is imperative that you include the most accurate, up-to-date information possible in the five-year accident history. This information may not always match the original estimates from the initial reporting of the accident's effects.

CERCLA Section 103(a) requires you to immediately notify the National Response Center if your facility releases a hazardous substance to the environment in greater than a reportable quantity (see 40 CFR part 302). Toxic substances regulated under

part 68 are also CERCLA hazardous substances, but most of the flammable substances regulated under part 68 are not subject to CERCLA reporting. Notice required under CERCLA includes the following information:

- ◆ The chemical name or identity of any substance involved in the release
- ◆ An indication of whether the substance is on the list referred to in Section 302(a)
- ◆ An estimate of the quantity of substance that was released into the environment
- ◆ The time and duration of the release
- ◆ The medium or media into which the release occurred.

EPCRA Section 304 requires facilities to report to the community emergency coordinator of the appropriate local emergency planning committee (LEPC) and state emergency response commission (SERC) releases of extremely hazardous substances to the environment in excess of reportable quantities (as set forth in 40 CFR part 302). All toxic substances regulated under part 68 are subject to EPCRA reporting; flammables regulated under part 68 are generally not subject to EPCRA reporting. The report required by EPCRA is to include:

- ◆ Chemical name or identity of all substances involved in the accident
- ◆ An estimate of the quantity of substances released to the environment
- ◆ The time and duration of the release.

The owner or operator is also required to release a Follow-up Emergency Notice as soon as possible after a release which requires notification. This notice should update the previously released information and include additional information regarding actions taken to respond to the release, any known or anticipated acute or chronic health risks associated with the release, and where appropriate, advice regarding medical attention necessary for exposed individuals.

OSHA's Log of Work-Related Injuries and Illnesses, OSHA Form 300, is used for recording and classifying recordable occupational injuries and illnesses, and for noting the extent and outcome of each case. The log shows when the occupational injury or illness occurred, to whom, what the injured or ill person's regular job was at the time of the injury or illness exposure, the kind of injury or illness, how much time was lost, and whether the case resulted in a fatality, etc. The following are the sections of the illness/ injury log that are useful in completing the accident history.

- ◆ **Column B:** Employee's name
- ◆ **Column C:** Job title

- ◆ **Column D:** Date of injury or onset of illness
- ◆ **Column F:** Description of injury or illness
- ◆ **Columns G, H, I, K, L:** Indicate whether a death occurred, whether injury resulted in lost workdays or restricted duty, and number of work days away from work or on restricted duty.
- ◆ **Column M:** Indicates whether injury occurred or type of illness.

PART 68 INCIDENT INVESTIGATION

An incident investigation is a requirement of the rule (§68.60 and 68.81). For accidents involving processes in Program 2 or Program 3, you must investigate each incident which resulted in, or could reasonably have resulted in, a catastrophic release of a regulated substance. A report, which includes the following information, should be prepared at the conclusion of the investigation:

- ◆ Date of incident
- ◆ Date investigation began
- ◆ Description of the incident
- ◆ Factors that contributed to the incident
- ◆ Any recommendations resulting from the investigation.

Because the incident investigation report must be retained for five years, you will have a record for completing the five-year accident history for updates of the RMP.

Qs &As ACCIDENT HISTORY

Q. When does the five-year period to be reported in the accident history begin?

A. The five-year accident history must include information on all accidental releases from covered processes meeting the specified criteria that occurred in the five years preceding the date of submission of your initial RMP or your most recent update required under section 68.190, as well as information provided to revise the accident history for any accidental releases that occur prior to the next required update. For example, if an RMP is updated on June 21, 2009, the five-year accident history must cover the period between June 21, 2004, and June 21, 2009. If a reportable accident occurs two months later, the five-year accident history must cover the period between June 21, 2004, and the date of the accident (see next question for further explanation).

Q. I recently submitted my five-year RMP update required by section 68.190 (b)(1) and included my accident history for the previous five years. Two months later, we had another reportable accident. Do I have to do anything to revise my RMP?

A. Yes. You must revise your accident history within six months of the date of the new accident to include information about it. You do this by correcting section 6 of your RMP (the accident history section) so that it includes all accident history information reported on the most recent update, as well as the information about the new accident. You should also indicate the reason for your correction (i.e., new accident history information) in the appropriate field in section 1 of RMP*eSubmit. Facilities reporting under Programs 2 and 3 must also revise the incident investigation information in their RMPs (section 7 or 8 of their RMP). Specifically, the date of investigation (40 CFR 68.170(j)) and the expected date of completion of any changes (40 CFR 68.175(l)) should be revised. You do not need to update or correct any other section of the RMP, unless you have taken actions (e.g., as a result of the accident) that trigger an update in accordance with section 68.190.

Q. If a facility has recently changed ownership, is the new facility owner required to include accidents which occurred prior to the transfer of ownership in the accident history portion of the RMP submitted for the facility?

A. Yes, accidents involving covered processes that occurred prior to the transfer of ownership should be included in the five-year accident history. You may want to explain that the ownership has changed in your Executive Summary.

Q. If I have a large on-site incident, but no offsite impact, would I have to report it in the five-year accident history?

A. It would depend on whether you have onsite deaths, injuries, or significant property damage. You could have a large accident without any of these consequences (e.g., a large spill that was contained); this type of release would not have to be included in the five-year accident history.

Q. I had a release where several people were treated at the hospital and released; they attributed their symptoms to exposure. We do not believe that their symptoms were in fact the result of exposure to the released substance. Do we have to report these as offsite impacts?

A. Yes, you should report them in your five-year accident history. You may want to use the executive summary to state that you do not believe that the impacts can be legitimately attributed to the release and explain why.