



Designation: E3228 – 19

Standard Guide for Environmental Knowledge Management¹

This standard is issued under the fixed designation E3228; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide describes good commercial and customary practice in documenting environmental risks, project, and program knowledge.

1.2 Considering that management of environmental liabilities can span very long timeframes, users of this guide understand that preserving key findings, decisions, obligations, commitments, and guarantees for coming generations of project teams is essential to efficient management of associated assets and liabilities.

1.3 *Units*—The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

- E1527 Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process
- E1689 Guide for Developing Conceptual Site Models for Contaminated Sites
- E1990 Guide for Performing Evaluations of Underground Storage Tank Systems for Operational Conformance with

¹ This guide is under the jurisdiction of ASTM Committee E50 on Environmental Assessment, Risk Management and Corrective Action and is the direct responsibility of Subcommittee E50.05 on Environmental Risk Management.

Current edition approved Oct. 15, 2019. Published January 2020. DOI: 10.1520/E3228-19

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

- 40 CFR, Part 280 Regulations
- E2091 Guide for Use of Activity and Use Limitations, Including Institutional and Engineering Controls
- E2137 Guide for Estimating Monetary Costs and Liabilities for Environmental Matters
- E2173 Guide for Disclosure of Environmental Liabilities
- E2681 Guide for Environmental Management of Underground Storage Tank Systems Storing Hazardous Substances or Petroleum
- E2790 Guide for Identifying and Complying With Continuing Obligations
- E3123 Guide for Recognition and Derecognition of Environmental Liabilities
- 2.2 U.S. Financial Accounting Standards Board Standards:³
 - ASC Topic 410-20 Asset retirement obligations
 - ASC Topic 410-30 Other environmental obligations
 - ASC Topic 450 Contingencies
 - ASC Topic 460 Guarantees
 - ASC Topic 820 Fair value measurement
- 2.3 U.S. Governmental Accounting Standards Board Standards:⁴
 - Statement 6 Accounting and Financial Reporting for Special Assessments
 - Statement 49 Pollution remediation obligations
 - Statement 72 Fair value measurement and application
 - Statement 83 Certain asset retirement obligations
- 2.4 International Accounting Standards Board Standard:
 - IAS 37 Provisions, contingent liabilities and contingent assets⁵
- 2.5 Federal Standards:⁶
 - 40 CFR 261 Identification and Listing of Hazardous Waste
 - 40 CFR 264 Subpart H Financial Requirements
 - 40 CFR 265 Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
 - 40 CFR 280 Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)

³ Available from the Financial Accounting Standards Board, www.fasb.org.

⁴ Available from the Governmental Accounting Standards Board, www.gasb.org.

⁵ Available from the International Accounting Standards Board, www.iasplus.com.

⁶ Available from the U.S. Government Publishing Office, www.govinfo.gov.

- 40 CFR Chapter I - ENVIRONMENTAL PROTECTION AGENCY
- SUBCHAPTER C - AIR PROGRAMS (Parts 50 - 99)
- SUBCHAPTER D - WATER PROGRAMS (Parts 100-103 - 149)
- SUBCHAPTER E - PESTICIDE PROGRAMS (Parts 150 - 181-189)
- SUBCHAPTER F - RADIATION PROTECTION PROGRAMS (Parts 190 - 197)
- SUBCHAPTER H - OCEAN DUMPING (Parts 220 - 238)
- SUBCHAPTER I - SOLID WASTES (Parts 239 - 283-299)
- SUBCHAPTER J - SUPERFUND, EMERGENCY PLANNING, AND COMMUNITY RIGHT-TO-KNOW PROGRAMS (Parts 300 - 375-399)
- SUBCHAPTER N - EFFLUENT GUIDELINES AND STANDARDS (Parts 400 - 471)
- SUBCHAPTER O - SEWAGE SLUDGE (Parts 501 - 503)
- SUBCHAPTER R - TOXIC SUBSTANCES CONTROL ACT (Parts 700 - 799)
- SUBCHAPTER U - AIR POLLUTION CONTROLS (Parts 1000-1026 - 1075-1099)
- 42 USC 9601 Definitions
- 42 USC 56901 Summary of Resource Conservation and Recovery Act

3. Terminology

3.1 Definitions:

3.1.1 *activity and use limitations, AULs, n*—legal or physical restrictions or limitations on the use of, or access to, a site or facility to eliminate or minimize potential exposures to chemicals of concern, or prevent activities that could interfere with the effectiveness of a response action, to ensure maintenance of a condition of “acceptable risk” or “no significant risk” to human health and the environment.

3.1.1.1 *Discussion*—These legal or physical restrictions are intended to prevent adverse impacts to individuals or populations, or environmental receptors, that may be exposed to chemicals of concern.

3.1.2 *aerial photographs, n*—photographs taken from an aerial platform with sufficient resolution to allow identification of development and activities of areas encompassing the property.

3.1.2.1 *Discussion*—Aerial photographs are often available from government agencies or private collections unique to a local area.

3.1.3 *asset retirement obligation, ARO, n*—legal or constructive obligations associated with the retirement of a tangible long-lived asset that result from the acquisition, construction, development, or normal operation of a tangible long-lived asset.

3.1.3.1 *Discussion*—Activities include, but are not limited to, demolition, decommissioning, decontamination, reclamation, restoration, and abandonment. Further detail is found in ASC 410-20 and GASB Statement 83.

3.1.4 *claim, n*—demand for payment or performance of services.

3.1.5 *commitment, n*—contracts, which may address or create environmental risks, typically outside of regulatory oversight.

3.1.5.1 *Discussion*—For example, a lease requirement to “return a property to lessor in original condition at lease-end” may create duties beyond those obligations arising from by current environmental regulations. Another example is a cost-sharing agreement for environmental liabilities between a buyer and a seller or between an insurer and their insured.

3.1.6 *component, n*—portion of a liability.

3.1.7 *contingency, n*—existing condition, situation, or set of circumstances involving uncertainty as to possible gain or loss to an entity that will ultimately be resolved when one or more future events occur or fail to occur. (ASC 450-20-20)

3.1.7.1 *Discussion*—Examples include: (1) injury or damage caused by products sold; (2) risk of loss or damage of property by fire, explosion, or other hazards; (3) actual or possible claims and assessments; (4) threat of expropriation of assets; and (5) pending or threatened litigation. (ASC 450-30-05-10)

3.1.8 *constructive obligation, n*—concept that past practice or statement creates a valid expectation on the part of a third party.

3.1.8.1 *Discussion*—An example of this is a company policy to excavate underground storage tanks once removed from service. Also known as promissory estoppel.

3.1.9 *costs and liabilities, n*—economic expenses, accrued liabilities, asset retirement obligations, impairments, and loss contingencies.

3.1.10 *derecognize, v*—remove previously recognized assets or liabilities from the statement of financial position.

3.1.11 *dutyholder, n*—entity responsible for the costs and liabilities.

3.1.12 *environmental liabilities, n*—set of liabilities consisting of five types: asset retirement obligations, environmental obligations, commitments, contingencies, and guarantees.

3.1.12.1 *Discussion*—Outside of a transaction, the ordinary value of these liabilities are their reserves or provisions (consisting of long-term and short-term portions). Within an actual or proposed transaction, environmental liabilities have “fair value measurement” (also “due diligence”) values.

3.1.13 *environmental obligation, n*—in contrast to an asset retirement obligation to remove an asset from service, environmental obligations include “environmental remediation liabilities,” “pollution remediation obligation,” “Superfund cleanup costs,” “spill response costs,” and others (see ASC 410-30 and GASB 49).

3.1.14 *equitable, adj*—type of obligation based on moral or social expectations, which is typically not enforceable; however, it is uncommon for an equitable obligation to lack a concurrent contractual, regulatory, and/or constructive obligation(s).

3.1.15 *fair value, n*—estimate of the price that could be received for an asset or paid to settle a liability in a current orderly transaction between marketplace participants that are unrelated, knowledgeable about factors relevant to the liability

and the transaction, able, and willing to transact in the reference market for the liability.

3.1.15.1 *Discussion*—Sometimes interchangeably called “due diligence values,” “bankruptcy values,” or “liquidation values.” Also, this approach implies a comprehensive and auditable expected value calculation. Further detail is found in FASB ASC Topic 820 and GASB Statement 72.

3.1.16 *guarantee, n*—type of environmental liability defined primarily in ASC Topic 460, the distinct value of a promise to perform or pay, in the event that another party does not.

3.1.16.1 *Discussion*—Under “joint and several liability,” a guarantee typically exists among the PRPs at a Superfund site. The cost of a CERCLA financial assurance instrument, such as a letter of credit or performance bond, is a guarantee above and beyond the cost of the guaranteed work or payment itself.

3.1.17 *land title records, n*—records that affect the title of real estate, which may include, among other things, deeds, mortgages, leases, land contracts, court orders, easements, and AULs within the recording systems or land registration systems created by statute in every state and ordinarily administered in the local jurisdiction (usually the county) in which the property is located.

3.1.17.1 *Discussion*—Such records are publicly accessible, though the process of searching for and finding land title records often requires specialized expertise or knowledge of the local system. Information about the title to the property that is recorded in a U.S. district court or any place other than where land title records are, by law or custom, recorded for the local jurisdiction in which the property is located, are not considered land title records.

3.1.18 *liability, n*—in FASB Concepts Statement No. 6, “probable future sacrifices of economic benefits arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events,” or alternatively, a portion of an enterprise’s balance sheet containing long-term debt, short-term accounts payable, pensions, and for the purpose of this guide, environmental liabilities.

3.1.18.1 *Discussion*—This includes legal obligations as well as constructive obligations (promissory estoppel) and may also be in the form of commitments, contingencies, or guarantees.

3.1.19 *no further action (NFA) letter or certificate, n*—document issued by a state, local, or regional environmental regulatory agency as part of a remediation program that specifies the conditions under which the regulatory agency will not require additional remedial action by the property owner.

3.1.20 *obligating event, n*—past outcome that confirmed an obligation.

3.1.21 *obligation, n*—legally enforceable duty of several types: (1) contractual, (2) regulatory, (3) constructive (promissory estoppel), or rarely (4) equitable.

3.1.22 *present obligation, n*—existing duty to achieve an outcome; whether enforced or not, conditions already exist for enforcement.

3.1.23 *purchase accounting adjustment, n*—process by which assets and liabilities are adjusted to fair value promptly after an acquisition.

3.1.23.1 *Discussion*—For environmental liabilities, this commonly results in corrections based on significant findings and decisions learned in the twelve months after a transaction is executed.

3.1.24 *recognition, n*—creation of an accrual (and/or footnoting) for an environmental liability.

3.1.24.1 *Discussion*—Also, “booking a liability.”

3.1.25 *recognition benchmark, n*—accounting term from U.S. GAAP noting specific points in the life of an environmental risk or liability, such as a remedial investigation, feasibility study, or remediation, when a revised estimate of the liability is advisable or necessary.

3.1.26 *reserve, n*—less formally, any accrual for environmental liabilities; more precisely, a provision that is matched with sequestered assets to fund future expenditures.

3.1.27 *settlement, n*—extinguishment of environmental liabilities normally through the performance of services or cash payments.

3.1.27.1 *Discussion*—Settlement through bankruptcy or corporate dissolution is uncommon. Settlement (or extinguishment) is the normal condition for derecognition.

3.1.28 *unasserted claims, n*—as stated by FASB in ASC 410-30-25-23, future actions of an entity, when they occur, may create an obligation to perform environmental remediation, however, no obligation exists currently (for example, if the obligation arises only when and if an entity ceases to operate a facility).

3.1.28.1 *Discussion*—Costs related to asset retirement, including costs of future site restoration or closure that are required upon the cessation of operations or sale of facilities, may create a current obligation that would be recognized in accordance with Subtopic 410-20.

3.2 Acronyms:

3.2.1 *AICPA, n*—American Institute of Certified Public Accountants

3.2.2 *ARO, n*—Asset retirement obligation

3.2.3 *ASC, n*—Accounting Standards Codification

3.2.4 *CAA, n*—Clean Air Act

3.2.5 *CEMS, n*—Continuous emission monitoring system

3.2.6 *CERCLA, n*—Comprehensive Environmental Response, Compensation and Liability Act of 1980 (as amended, 42 USC Section 9601 et seq.)

3.2.7 *CFR, n*—Code of Federal Regulations

3.2.8 *EHS, n*—Environment, health, and safety

3.2.9 *FASB, n*—Financial Accounting Standards Board

3.2.10 *GAAP, n*—Generally accepted accounting principles

3.2.11 *GASB, n*—Governmental Accounting Standards Board

3.2.12 *GIS, n*—Geographical information system

3.2.13 *GPS, n*—Global positioning system

3.2.14 *HAZWOPER, n*—Hazardous Waste Operations and Emergency Response

3.2.15 *IAS, n*—International Accounting Standard

- 3.2.16 *IASB*, *n*—International Accounting Standards Board
- 3.2.17 *IC/EC*, *n*—Institutional controls/engineering controls
- 3.2.18 *ID*, *n*—Identification
- 3.2.19 *IFRS*, *n*—International Financial Reporting Standard
- 3.2.20 *MSDS*, *n*—Material safety data sheets
- 3.2.21 *NESHAP*, *n*—National Emission Standards for Hazardous Air Pollutants
- 3.2.22 *NPDES*, *n*—National Pollutant Discharge Elimination System
- 3.2.23 *NSPS*, *n*—New Source Performance Standards
- 3.2.24 *ODS*, *n*—Ozone-depleting substances
- 3.2.25 *OSHA*, *n*—Occupational Safety and Health Administration
- 3.2.26 *PRP*, *n*—Potentially responsible party
- 3.2.27 *RCRA*, *n*—Resource Conservation and Recovery Act (as amended 42 USC Section 6901 et seq.)
- 3.2.28 *SDS*, *n*—Safety data sheets
- 3.2.29 *SEC*, *n*—Securities and Exchange Commission
- 3.2.30 *SWPCP*, *n*—Stormwater pollution control plans
- 3.2.31 *SWPPP*, *n*—Stormwater pollution prevention plans
- 3.2.32 *TBA*, *n*—Tert-butyl alcohol
- 3.2.33 *TSCA*, *n*—Toxic Substances Control Act
- 3.2.34 *TSDF*, *n*—Treatment, storage, and disposal facilities
- 3.2.35 *USDA*, *n*—U.S. Department of Agriculture
- 3.2.36 *USEPA*, *n*—U.S. Environmental Protection Agency
- 3.2.37 *USGS*, *n*—U.S. Geological Survey
- 3.2.38 *VCP*, *n*—Voluntary cleanup programs

4. Significance and Use

4.1 *Use*—This guide is intended for use on a voluntary basis for evaluating data for long term storage as they relate to environmental matters. The user may elect to apply this guide for any or all of these purposes:

- 4.1.1 Determining an entity’s document retention policies;
- 4.1.2 Designing and implementing a system for cataloging the documents stored under this guide;
- 4.1.3 Documenting whether a property is subject to regulatory action;
- 4.1.4 Supporting evaluation of whether similar environmental risks (for example, permits, plant, or process expansion) are being recognized at similar points in their lifecycle per Guide [E3123](#);
- 4.1.5 Supporting evaluation of whether similar environmental risks and liabilities are being managed to similar outcomes per Guide [E3123](#);
- 4.1.6 Supporting the determination of liability values per Guide [E2137](#);
- 4.1.7 Supporting due diligence analysis for proposed mergers, acquisitions, or spinoffs;
- 4.1.8 Documenting key decisions on environmental liability provisions, reserves, budgets, and cash flow forecasts, including recognition benchmarks and obligating events (see Guide [E3123](#));

- 4.1.9 Providing documentation to support the identification and analysis of liabilities associated with:
 - 4.1.9.1 Certain remedial alternatives;
 - 4.1.9.2 Future land uses, property transfer, and redevelopment decisions;
 - 4.1.9.3 Land use alternatives for former landfills and chemically impacted sites; and
 - 4.1.9.4 Meeting regulatory requirements;
- 4.1.10 Designing and implementing project and program controls;
- 4.1.11 Defending against third-party lawsuits;
- 4.1.12 Calculating insurance premiums;
- 4.1.13 Making and settling insurance claims;
- 4.1.14 Making purchase accounting adjustments;
- 4.1.15 Preparing an audit defense; and
- 4.1.16 Completing financial and investment analysis.

4.2 *Needs Regarding Document Formats*—Preserve data across time, eliminate duplicate file collection, and maintain data and files in contemporary formats to avoid stranded/obsolete data.

4.2.1 *General Practice*—Maintain documents in original format; every ten years, migrate files to a current version of the most popular application in the following categories:

- 4.2.1.1 Spreadsheets;
- 4.2.1.2 Databases;
- 4.2.1.3 Text documents (such as pdf and word-processing files);
- 4.2.1.4 Still images (such as JPEG and GIF);
- 4.2.1.5 Video images;
- 4.2.1.6 GIS files;
- 4.2.1.7 E-mail; and
- 4.2.1.8 In the case of paper and facsimile documents, photographs, photographic negatives, and motion picture film, digitization should be completed on the best available copy within ten years of creation (or as soon as possible).

5. Procedure: Key Areas of Knowledge Retention

5.1 *Regulator, Property, and/or Case Identifiers*:

5.1.1 *Need*—Different entities issue alphanumeric identifiers to environmental risks, sites, and matters to simplify administration. It is common for the boundaries of one identifier (postal code) to not match another (property tax parcel boundaries) and that these boundaries will change over time. The purpose in maintaining the following identifiers is to ensure that risks, projects, and matters are not replicated or omitted:

- 5.1.2 State (facility or site ID);
- 5.1.3 USEPA (see Guide [E2173](#) definitions for list of the databases that USEPA keeps);
- 5.1.4 GPS coordinates in regulatory database;
- 5.1.5 Parcel boundaries (county deed recorder);
- 5.1.6 Claims and patents concerning mineral rights;
- 5.1.7 Federal, state, and local permit numbers (for example, RCRA, NPDES, air emissions, fire department);
- 5.1.8 Consent decree number;
- 5.1.9 Agreed/administrative order on consent number;
- 5.1.10 Notice of violation number;
- 5.1.11 Court case number;
- 5.1.12 Postal address;

- 5.1.13 Aliases;
- 5.1.14 Owner name(s); and
- 5.1.15 Tenant name(s).

5.2 *Potential Site Environmental Impairment:*

5.2.1 *Need*—Different environmental regulators, property owners, and others associated with the environmental management of sites communicate environmental risks, conditions, and liabilities in different ways such as:

5.2.2 Records of on-site spills, discharges, or releases of hazardous substances;

5.2.3 Notices from federal or state/provincial agencies indicating that a site is subject to CERCLA (or similar state/provincial laws and regulations) and a PRP may carry an obligation to address environmental conditions at that site;

5.2.4 Unilateral orders or orders on consent for site investigation and remediation under RCRA or state hazardous waste statutes;

5.2.5 Notices from federal or state agencies indicating that the site is within 1500 ft (457 m) of a CERCLA site or state cleanup site and these may include notices of public hearings, public meetings, and records repositories;

5.2.6 Notice(s) from adjacent property owner(s) that the adjacent property is the subject of a site remediation or site cleanup order;

5.2.7 Notice(s) from federal or state agencies that adjacent properties are subject to activity and use limitations, see Guides [E2091](#) and [E2790](#);

5.2.8 Notices or other items in the land title record or publicly available databases indicating that the property is subject to activity and use limitations;

NOTE 1—These could include restrictions on the use of groundwater, disturbing engineering controls (such as AULs), and access to certain portions of the property.

5.2.9 Records of claims against insurance policies for environmental impairment; and

5.2.10 Conceptual site models developed for the property indicating chemicals of concern and exposure pathways (see Guide [E1689](#)).

5.3 *Permit and Compliance History:*

5.3.1 *Need*—Facilities often have on-site releases of pollutants that directly or indirectly discharge into the environment and that are controlled by permits issued by Federal, State or local regulatory agencies. Facilities may discharge to waters of the United States, public-owned treatment plants, or injection wells in accordance with permits issued under the auspices of the Clean Water Act and state and local statutes. Facilities may also release fugitive or stack emissions to ambient air in accordance with permits issued under the auspices of the Clean Air Act and state and local statutes. On-site waste treatment, storage or disposal operations may also be subject to permit requirements under the Resource Conservation and Recovery Act that establish technical design and operating performance standards as well as financial assurance requirements for facility closure. Evaluating compliance with these regulatory and permit requirements can be an effective tool for estimating environmental liabilities (see Guide [E2173](#)). The facility may be able to calculate on an annual basis the estimated quantity

of each chemical discharged on-site or transferred to off-site facilities. Many facilities are required to report these amounts for certain chemicals through Toxics Release Inventory reporting under the Pollution Prevention Act of 1990. This information is critical if the facility is named as a regulated site or as a PRP under CERCLA and the facility is seeking to control its potential liability.

NOTE 2—Facilities may be required to have permits, filed registrations, or notifications to install certain systems and also have operating permits; operation and maintenance plans; inspection, monitoring, and testing records; compliance certification reports; and operating records associated with process operations and operation of pollution control systems under a variety of federal, state, and local regulations. Evaluating compliance with these permit requirements can be an effective tool for estimating environmental liabilities (see Guide [E2173](#)). The facility may use monitoring and operations data to support the permitting process.

5.3.2 *NPDES Permit Records:*

5.3.2.1 Discharge monitoring reports and associated laboratory analysis;

5.3.2.2 Equipment and facility inspection reports;

5.3.2.3 Exceedance reports and corrective action plans;

5.3.2.4 Permit applications;

5.3.2.5 Correspondence to and from regulatory agencies;

5.3.2.6 Equipment operations and maintenance records;

5.3.2.7 Employee training records associated with NPDES to affirm skill levels and competence;

5.3.2.8 Engineer drawings and as-built drawings for storage tanks and secondary containment structures; and

5.3.2.9 *NPDES storm water permits:*

(1) Discharge monitoring reports and associated laboratory analysis,

(2) Exceedance reports and storm water action plans,

(3) SWPCP,

(4) SWPPP for construction activities,

(5) Inspection reports prepared in accordance with the SWPCP and SWPPP,

(6) Operations and maintenance plans and records for equipment used to prevent or control storm water pollution,

(7) Spill response notifications and reports,

(8) Correspondence to and from regulatory agencies,

(9) Employee training records associated with SWPCP and SWPPP, and

(10) Engineer drawings and as-built drawings for storage tanks and secondary containment structures.

5.3.3 *Records Associated with the Storage, Use, and Distribution of Hazardous Materials including Petroleum Products:*

5.3.3.1 Spill Prevention Control and Countermeasures (SPCC) Plan;

5.3.3.2 Employee training records associated with SPCC Plan;

5.3.3.3 Engineer drawings and as-built drawings for storage tanks and secondary containment structures;

5.3.3.4 Inspection logs for tank systems, tank/line integrity testing, and leak detection systems;

5.3.3.5 Toxic release inventories;

5.3.3.6 SARA Title III Tier II reports and similar state or local reports or both;

5.3.3.7 Records related to underground storage tanks (required under 40 CFR 280; see Guides [E1990](#) and [E2681](#));

5.3.3.8 SDS documents (formerly MSDS sheets) for products; and

5.3.3.9 TSCA reports.

5.3.4 *Operations History*—Information relevant to the historical timeline of installation and modification of operations at the facility that would manufacture, process, or otherwise use hazardous chemicals; generate waste or waste by-products; and release chemicals to the environment is helpful to identify the likelihood of past uses having led to recognized environmental conditions (see Practice E1527 for definition) in connection with the property. Sources might include corporate brochures, annual reports, engineering process flow diagrams, capital project documents, and corporate records on process development and testing relative to process safety design and generation of by-products and wastes.

5.3.5 *Air Emission Records*—Air permit applications, issued air permits, CEMS or stack emissions testing records, notifications and compliance certifications to regulatory requirements under NSPS or NESHAP standards, records for management of ODS chemicals, risk management plans, or CAA General Duty Clause obligations for risk management and emergency planning related to air toxics including off-site consequence analysis.

5.3.6 *OSHA Process Safety Management*—Records of process hazard evaluations for process operations and operating procedures to prevent accidental releases, incident investigation and root cause evaluations, and records of corrective action implementation.

5.4 *Solid Waste Management Records:*

5.4.1 *Need*—An entity’s management and ultimate disposal of solid waste, including hazardous waste, non-RCRA waste, and radioactive waste has been used to assess liability under CERCLA and state versions of CERCLA. Users of this guide may find it useful to review and store records relating to the generation, transportation, disposal, and discharge or release(s) of hazardous substances that may include solid waste, hazardous waste as defined by RCRA 40 CFR 261 et seq, non-RCRA regulated waste (also known as “state-only waste”), and materials regulated by the Nuclear Regulatory Agency; in some cases, these records may extend back more than 100 years and/or include waste management practices which were explicitly authorized by a regulator at the time.

5.4.2 *Solid Waste Management Records:*

5.4.2.1 For third-party vendor storage/disposal:

(1) Monthly invoices showing the quantity of waste shipped off site and identity of the transporter and the designated receiving site or transfer site;

(2) If available, the type of waste shipped off site (for example, plastic, paper, metal, and glass);

(3) Bills of lading or other shipping documents and contracts with transporter(s) to determine arranger liability;

(4) Waste profiles (including lab results and/or chemical description) and supporting data (weight, source);

(5) Regulatory certification(s) of disposal sites, transporters, and temporary storage location(s); and

(6) Periodic inspection reports and audit results demonstrating housekeeping level, vessel integrity/age, fencing, and so forth; should include photos or video.

5.4.2.2 For local disposal/storage (such as an on-site landfill):

(1) Maps or drawings denoting on-site disposal locations, and as-built construction (liners, leachate treatment, cap, day cover contents, and so forth);

(2) Waste profiles and supporting data (weight, source);

(3) If available, the type of waste shipped off site (for example, plastic, paper, metal, and glass); and

(4) Periodic inspection reports and audit results demonstrating housekeeping level, vessel integrity/age, fencing, and so forth; should include photos or video.

5.5 *Hazardous or Special Waste Management Records or Both:*

5.5.1 Notification records to local, provincial/state, and federal agencies indicating the site’s generator status (for example, conditionally exempt small quantity generator, small quantity generator, large quantity generator, and interim status);

5.5.2 Permit applications (not limited to solid or hazardous materials or wastes);

5.5.3 Permits;

5.5.4 Permit modifications/renewals;

5.5.5 Waste analysis records include laboratory analyses and container type;

5.5.6 Waste diversion records, contracts, and by-product analysis showing recyclable/beneficial reuse;

5.5.7 Uniform hazardous waste manifests (or local equivalent for regulated waste) and bills of lading or non-hazardous waste manifests (or local equivalent) for unregulated wastes;

5.5.8 Discrepancy notices and violations for the designated TSDF;

5.5.9 Documentation from the designated TSDFs indicating that TSDF is permitted to receive the waste; associated vendor certificate of insurance;

5.5.10 Biennial RCRA Hazardous Waste Report (or local equivalent) or, if applicable, state/provincial annual hazardous waste report;

5.5.11 Audit results from periodic inspections;

5.5.12 Proof of use of permitted TSDFs or recycling companies;

5.5.13 Records of payments;

5.5.14 Purchase order/certificate of insurance;

5.5.15 Entity’s internal employee training records to demonstrate competence in waste management, spill response, emergency action plans, business continuity plans, and consolidated contingency plans;

NOTE 3—These records could include: hazard communication and HAZWOPER awareness.

5.5.16 SDS and MSDS for materials used at the plant and products processed or manufactured at the plant; more useful with the associated quantity of materials processed each year; and

5.5.17 Maps or drawings indicated the location(s) of hazardous material/waste accumulation or storage include container storage areas and storage tanks.

5.6 *Medical Records:*