

# **ENVIRONMENTAL, SAFETY AND OCCUPATIONAL HEALTH AWARENESS TRAINING MANUAL**



**DLA Strategic Materials**

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ERRATA PAGE FOR ENVIRONMENTAL SAFETY AND OCCUPATIONAL HEALTH  
AWARENESS TRAINING MANUAL-REVISION No. 2, AUGUST 2010

Table 2, Page 25

IGD 1002: Change “Title” Column to read “ISO 14001-4.3.1: Environmental Aspects”

IGD 1004: Change “Title” Column to read “ISO 14001-4.3.3: Objective, targets and programme(s)”

IGD 1005: Change “Title” Column to read “ISO 14001-4.3.3: Objective, targets and programme(s)”



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## Objective

*This training manual is provided to you by the Defense Logistics Agency, Strategic Materials. The most important message from this document is that each individual within this organization is a key player in protecting the environment. Some questions you may be asking are: Why should I care? How can I possibly make a difference? And why now?*

*We hope the following information will provide you with some answers to these important questions.*

# Why Should I Care?

First, environmental compliance is one of the main directives within the our operating procedures; therefore, in order to do your job, you must adhere to the directives stipulated within the environmental policy. Also failure to comply with environmental legislation may incur harm to human health or the environment and maybe even have legal ramifications. But more importantly, it is our hope that each of you will embrace the doctrines of environmental stewardship.

Environmental stewardship can be defined as the responsible, long-term management of resources in a way that minimizes harm to humans and the environment. Although the term environmental stewardship may be relatively new, the ideas behind this philosophy have been around for a long time. As early as 1898, Gifford Pinchot, considered the “father of conservation,” wrote about the inter-

connection and interdependence of all elements within the environment. He felt that land use should be managed so that it can benefit those who live here NOW. The philosophy of resource management was important, but the effect of this management on future land use was given little thought until Rachel Carson published her book, *Silent Spring*. Ms. Carson was a zoologist who was very successful writing scientific information in such a way that it also educated and inspired the public. *Silent Spring* (first published in 1962) talked about the bioaccumulation of DDT and the effect it had on the surrounding ecology. It documented the effects that application of DDT had on the interconnection of plant, soil and animal. It pointed out that the effects of these applications did not diminish with time, rather, they accrued more toxic substance.

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These effects could potentially result in the depletion of all songbirds-hence the name *Silent Spring*. There were numerous individuals who were important to the environmental revolution. Some, such as John Muir (one of the founders of the Sierra Club), Henry David Thoreau, and George Perkins Marsh, felt that nature was of such intrinsic value and beauty that it should be preserved at all costs. They championed preservation of the land and protection from the human species. As scientific measurements became more sophisticated, it became easier to document environmental interdependence. For example, we knew how much of a pesticide was applied to the plants; we could measure how that pesticide accumulated in the water, air, and soil; and then we could see what effect that had on the surrounding wildlife. This was valuable information and individuals such as Jan C. Smuts and Barry Commoner explored in depth these interrelations, finally documenting environmental interdependence. These individuals, and too many others to name in this document, cared enough to undertake the challenges of affecting change, and we were able to use these valuable lessons and enact environmental legislation.

As this environmental awareness was awakening, our environmental

barometers were also sounding alarms. In 1969, the Cuyahoga River, flowing through Cleveland, Ohio, actually caught on fire, and a spill off the coast of California had left millions of gallons of oil along the coastline. As far back

Rachel Carson was a federal employee for fifteen years with the U.S. Fish and Wildlife Service. She was able to incorporate her work experiences into many of her literary works. She believed in the interdependence of the environment and humankind. Our world is richer due to her literary legacy such as *The Sea Around Us* (1951) and *Silent Spring* (1962).



**Rachel Carson**

as the industrial revolution during the late 1800's, large industrial cities such as Chicago and Cincinnati enacted air quality regulations. During the 1940's, serious smog incidents in Los Angeles, California and Donora, Pennsylvania raised public concern and precipitated the inception of the Air Pollution Control Act of 1955. Although some environmental legislation was passed prior to 1960, the majority of legislation was propagated and enacted during the 1960's and 1970's. Table 1 lists some of the federal environmental laws that impact our activities. Operations are also governed by state and local agencies, as well as, the United States Department of Defense.

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Some legislation included within the Department of Defense includes the regulation of natural and cultural resources. Natural resources include: wetlands, soils, wildlife, forestry and rangeland management. Cultural resources include: historic preservation, Native American issues, pest management, archeological protection and curation of known artifacts. Although federal legislation may dictate the effective management of some of these topics, the US Department of Defense is very specific about the handling of such issues. In the past we have contracted with the Parks and Wildlife Service to complete both natural and cultural assessments of each depot.

This interesting information will not only enhance your knowledge of your surroundings, but will also provide you with the rich history of some of these installations. You will find that in most cases, the depots were

formerly used defense sites with responsive operations directly supporting the war effort. Some depots have been involved in military activity since the Civil War. Along with the military action, depots have maintained and regulated land use, including soil, water and wildlife.

All of this activity has made an environmental impact on the surroundings you work within. Most of our facilities are the last untouched, open spaces affording proliferation of many forms of animal and plant life within urbanized / industrialized areas. It is important to notice what negative and positive impacts we have made in support of our armed forces. Supporting the military effort has always been our primary objective, and although these activities may have had adverse affects, we are proud to be a part of the war effort. Through proactive response to environmental legislation, we will continue to support

**“For two reasons, our generation will bear a heavier responsibility for the future of planet Earth than any generation before others. First, we know better – having gained access to an unprecedented wealth of new scientific information and a vastly improved capacity for analysis and prediction. Second, we can do better – having accumulated enough experience, technological and institutional, to take the necessary actions.”**

Peter Sand “Lessons Learned in Global Environmental Government” (18 Env'tl. Aff. L. Rev 1 [1990])

our military objective while being responsible environmental stewards.

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**TABLE 1  
PERTINENT FEDERAL LAWS THAT IMPACT ACTIVITIES**

YEAR ENACTED	STATUTE	ENFORCEMENT OBJECTIVES	ENFORCEMENT INVOLVEMENT
1970	<b>National Environmental Policy Act (NEPA)</b>  <i>Regulation: 42 USC 4321-4370; various topical areas throughout CFR including 7, 10, and 29.</i>	One of the most far-reaching environmental policies. Its purpose is to encourage a harmony between activities in business, social communities, and the environment. Although much of the language is vague, it addresses issues to attain the widest range of beneficial use of resources without causing undesirable effects to the environment.	Literally all activity undertaken by DLA Strategic Materials is somehow governed by this act. One such important activity is the mercury environmental impact study.
1970	<b>Occupational Safety and Health Act (OSHA)</b>	This act regulates the handling and managing of hazardous materials in the workplace by providing employee “right-to-know” information and emergency response training.	Depots maintain a complete set of material safety data sheets (MSDS) for commodities/chemicals stored and used at the installation. Depots also insure that Fire Departments and local Emergency Response Departments are aware of depot activities and commodities/chemicals stored.
1970	<b>Clean Air Act (CAA)</b>  <i>Regulation: 40 CFR 50-99</i>	Emissions of pollutant to the atmosphere are regulated by this act. Enforcement is done through the requirement of state air quality implementation plans and operating permits for sources of toxic and hazardous air pollutants.	No facility operation requires permitting. Fugitive dust generated during out loading of ores, minerals and metals may potentially fall within this legislation. Depots assure that dust generated either on the roadways or during out loading is minimized through the application of water or other engineering devices (ex. fans, alternate loading procedures).
1972	<b>Federal Insecticide, Fungicide &amp; Rodenticide Act (FIFRA)</b>  <i>Regulation: 40 CFR 150-189</i>	This law provides information for the environmentally safe use of pesticides and herbicides.	Each depot follows a Pest Management Plan that includes the requirements for application/use of these chemicals as warranted.
1972	<b>Clean Water Act (CWA)</b>  <i>Regulation: 40 CFR 100-145; 220-232; 410-471</i>	Provisions for regulating discharge of wastewater to rivers and streams or to publicly owned treatment works are included within this policy.	Depots have spill prevention and storm water run-off plans as dictated within this act. These are “living” documents and change as the facility and its stored commodities change. Depot personnel receive annual training to assure they are aware of these changes. Also depot personnel are an integral part in defining best management practices (BMP’s) that can be used to insure the directives within this law are met.

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**TABLE 1 (CONTINUED)  
PERTINENT FEDERAL LAWS THAT IMPACT ACTIVITIES**

YEAR ENACTED	STATUTE	ENFORCEMENT OBJECTIVES	ENFORCEMENT INVOLVEMENT
1974	<b>Safe Drinking Water Act (SDWA)</b>  <i>Regulation: 40 CFR 40</i>	Standards for drinking water quality and operation of public water treatment plants, as well as injection of wastes (including septic tanks) are all addressed within this act.	Most of the locations are on public water supplies and are not directly affected by this legislation; however, several depots use bottled water and are exempt from testing.
1975	<b>Hazardous Material Transportation Act (HMTA)</b>  <i>Regulation: 49 CFR 100-180</i>	The Department of Transportation regulates this act and it includes laws about all packaging and transportation of hazardous materials.	Facilities transport commodities that may fall within this guidance, all shipping orders contain specific procedures for transport of such commodities.
1976	<b>Toxic Substances Control Act (TSCA)</b>  <i>Regulation: 40 CFR 700-799</i>	Regulation of the manufacture and use of most chemicals including asbestos and polychlorinated biphenyls (PCBs) are included within this legislation. Reporting, labeling, use restrictions, and record keeping of chemicals that pose risk to health and the environment are required.	We have removed PCB containing transformers from all depots, and all stored asbestos has been removed.
1976	<b>Resource Conservation &amp; Recovery Act (RCRA)</b>  <i>Regulation: 40 CFR 240-299</i>	Generation, transportation, treatment, and disposal of hazardous and non-hazardous wastes are discussed within this act. Storage of fuel within underground storage tanks is also addressed.	Depots maintain strict compliance with and make improvements to their operations to better address all the facets of this law. All underground storage tanks have been removed from all depots.
1980	<b>Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Superfund Amendments and Reauthorization Act (1986)</b>  <i>Regulation: 40 CFR 300-311</i>	This act is usually referred to as the “Superfund” act and requires reporting hazardous substance spills while establishing liability for cleanup of the spills. The law has provisions that delineate potentially responsible parties (PRPs) so they can assess liability for cleaning up former spills.	As you can imagine this can be a legal challenges and is one that will require continued involvement. As we leave sites, assessments are done to see what “footprint” our storage has made on the environment. Past land use has a huge impact on these findings. Although negative impacts may not have been part of operating procedures, we may be held accountable. Depots make every effort to assure we have data and knowledge of past and present operating procedures. Also, to

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**TABLE 1 (CONTINUED)  
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YEAR ENACTED	STATUTE	ENFORCEMENT OBJECTIVES	ENFORCEMENT INVOLVEMENT
			comply with this law, depot personnel interact with community members through the establishment of community advisory boards (CAB's). CAB's are formed when there is sustained interest in a local community to periodically meet with our personnel to review technical information developed during and following the Remedial Investigation phase of the Installation Restoration Program.
1986	<b>Emergency Planning and Community Right to Know Act (EPCRA)</b>  <i>Regulation: 40 CFR 350-374</i>	This law is also known as Title III of the Superfund Amendment Reauthorization Act (SARA title III). It provides employees and citizens access to information about hazardous substances/material in their community.	Depots annually submit information (Toxic Chemical Inventory Form, Toxic Chemical Release Form) to governing agencies listing substances and commodities relative to this act. Additionally depots maintain and make accessible all Material Safety Data Sheets (MSDS) relative to depot operations. Depots also follow directives stipulated in their emergency planning notification document, as regulated by this act.
2007	<b>Executive Order 13423</b>	Requires Federal agencies to lead by example in advancing the nation's energy security and environmental performance.	DLA Strategic Materials operates an Environmental Management System to meet conservation and efficiency goals.
2009	<b>Executive Order 13514</b>	Requires that Federal agencies improve water efficiency and management.	Depots do not use water for purposes other than, drinking, sewage and fire suppression.

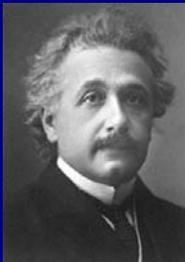
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# How Can I Make A Difference?

*“A hundred times every day I remind myself that my inner and outer life depend on the labours of other men, living and dead, and that I must exert myself in order to give in the same measure as I have received and am still receiving.”*

**Albert  
Einstein**



This is a very important question and one with as many answers as there are individuals within our operations. The first pages of this document talked about the inception of environmental awareness and what we as a society have done to address our concerns. The following paragraphs will offer some ideas about ways each person within this organization can make a difference.

We all need a framework to function within. We have provided this framework and developed an environmental safety and occupational health management program. Operations that are affected by key environmental and safety laws/regulations have been evaluated. We have dictated policies, procedures and goals that will ultimately allow us to achieve excellence through proactive environmental management. Each of

us has a clearly defined job with specific responsibilities. We have each been trained in the appropriate facets of the job. We will, as an organization, impose audits and corrective actions that will ensure that through our work effort, we are meeting objectives stipulated within our management plan. With thorough and complete record keeping, we will assess accountability through our auditing program and make recommendations.

Then we will take the necessary steps to ensure all recommendations are effectively addressed. These are lofty objectives and something that will require the commitment of each of us. We must all be aware of adverse environmental impacts that can be a direct cause of our own procedures, if we do not carefully follow our operating policies.

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Our environmental safety and occupational health policy statement (ESOH) is the backbone of our environmental management program. Presented in Appendix A, the statement contains essentially three distinct parts. The first part stresses the importance of proactive environmental stewardship and states that it is among one of our highest values. The second part of the statement lists the principles that we will institute. These include not only policy actions but also philosophical ideals. The last part of the statement reinforces the importance of the employee's commitment, which is tantamount to the success of the program.

This clear, consistent and concise statement will resound through every procedure undertaken by this organization. Upon this comprehensive framework, roles and responsibilities of each employee will be continually evaluated to assure that we are meeting our environmental performance standards while effectively supporting the armed forces.

Now that we have developed a framework to function within, we still need to answer the question of, how can I make a difference? In order to be an effective environmental steward you must:

- Have a general awareness of the environmental laws and how they affect your work areas(s).
- Identify and implement ways to prevent pollution.



**Roger Tory Peterson  
1908 - 1996**

*There are few individuals that have impacted the simple appreciation of nature more than Roger Tory Peterson. He was an avid bird watcher and artist born in Jamestown, New York. He attended art school in New York, New York while continuing his love for bird watching. He was instrumental in developing birding groups that visited wooded areas around New York City. He knew that once you watch the activities of birds you become a naturalist because, through birds you can quickly view the impacts of environmental influences. You are able to readily see their life cycles, including their migration, mating, nesting, raising and nurturing of their young.*

*Roger Tory Peterson recognized that inexplicable harmony between man and nature. He celebrated that harmony, and the joy of its creatures, through his many paintings and informational field guides.*

- Report incidents that affect the environment and take the appropriate level of corrective action.
- Ensure that our environmental and safety and health policies and procedures are being followed.
- Maintain an open and positive relationship with the community.

Table 1 is a list of pertinent federal environmental laws that impact our activities. Please take the time to look at this list and see how each of your installations and /or job responsibilities may be affected by this legislation.

Appendices B and C provide definitions of terms and acronyms, respectively, that may help you understand these regulations

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You must not be satisfied with simply following the current legislation; instead, you should ask yourself important questions. The following two lists may help you focus on those facets of your job that have the potential to impact the environment. We have included only two position functions for this example, and they are by no means complete. They are offered only as information that can help you better evaluate your individual situation.



**Interesting Fact:**

- The average amount spent on office paper each year amounts to \$4 billion, with four million tons of paper being used. That amounts to 27 pounds per person. An average office worker uses 10,000 pieces of paper a year.

**Office Positions**

- Do I purchase supplies and/or equipment? Do I know what affirmative procurement is, and do I know how to use it?
- Is my work area neat? Could someone trip or fall over material stored in my area?
- Do I make copies of documents? Do I use the front and back of the paper?
- Do I use space heaters or fans in my area? Are they turned off when not in use and are they equipped with some sort of “safety tip over switch?”

- Do I discard supplies such as used paper, drink cans/bottles, and ink cartridges? Am I currently recycling these items?
- Do I run additional office equipment from my desk such as a printer or a fax machine? Is this equipment energy saving (i.e., does it pause or shut off when not in use)?
- If there is an emergency, do I know whom to contact?
- Have I looked at the material safety data sheets (MSDS) for chemicals/office supplies I use in my daily activities? Do I know where updated copies of these are maintained?
- Do I maintain a comfortable conservative thermostat temperature setting in my office?
- Do I obey the no smoking and warning signs in the office?

A graphic of a spiral-bound notebook with a brown cover and a white page. The page contains the following text:

**Think of some actions you can take at your installation to improve environmental compliances or lessen natural resources:**

- ✓ I can ???
- ✓ I will ???
- ✓ I shall ???

**“Because I am a key player in protecting the environment”**

- Do I know what the fire alarm sounds like? If it sounds, do I know the evacuation procedure? Do I know what constitutes an emergency?

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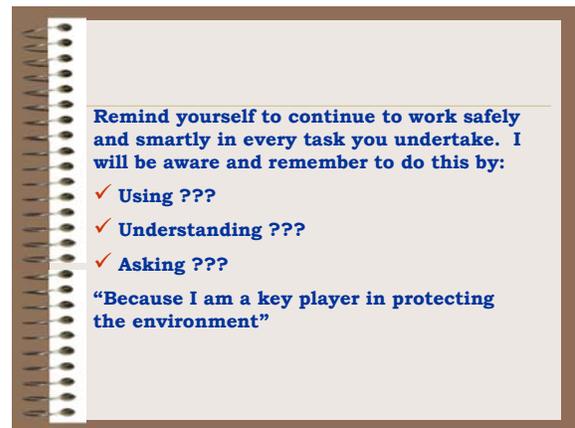
- Do I minimize the amount of new office supplies I use? Do I reuse old file folders and notebooks?
- Do I know where emergency equipment is located?
- Do I turn off the lights and radio when I leave my office?

### **Fork Lift Operator and General Supply Specialist Positions**

- Do I inspect my equipment daily? Do I follow depot preventative maintenance operations on my equipment? Do I notify my supervisor if equipment is not working satisfactorily?
- Do I know where emergency equipment is located?
- Do I have complete understanding of how to perform my assigned task? Am I comfortable with the procedure I am directed to follow? Can I improve the procedure to make it safer or have less of an environmental impact?
- Do I know what different alarms sound like? If one sounds, do I know the appropriate procedure to follow?
- Do I obey all warning and hazard signs?
- If there is an emergency, do I know whom to contact? When or in what order should contacts be made?
- Do I have the appropriate personal protective equipment for the job?

- When I fill the equipment with fuel, do I make every effort to assure that I do not spill excess fuel from the hose? If there is a fuel leak, do I know what to do?
- Am I aware of the storm water plan for my installation?
- Do I have suggestions about management practices that could improve this plan?
- Is my work area clean and free of all debris?

These seem like very common sense ideas, and small in impact, but when instituted throughout an organization, they can bring about substantial positive change.



### **Interesting Facts:**

- Hunters are some of the strongest environmental advocates. One such example is the Izaak Walton League of America which has continued to promote environmental action for over 75 years. This organization of hunters and anglers fosters union with environmental issues to protect and conserve the outdoors.

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# **POLLUTION PREVENTION:**

Pollution is defined as the presence of matter or energy whose nature, location or quantity produces undesirable effects. You minimize pollution when you turn off the lights or recycle paper. You make even more of a difference when you limit the amount of unnecessary trips you take in your vehicle, use paper instead of plastic bags at the store, and dispose of all trash in appropriate receptacles. These are ongoing issues, and as products and job functions change you must constantly assess how you can minimize, reduce or recycle the natural resources you utilize every day.

Pollution prevention is important because it:

- Eliminates the risks associated with any release of pollutants to the environment.
- Avoids shifts of pollution from one medium (air, water, or land) to another.
- Protects natural resources for future generations by eliminating or reducing wastes and conserving resources.

Pollution prevention benefits us by:

- Making the workplace safer because workers have less contact with hazardous materials.
- Reducing environmental impacts because less pollution is created.
- Conserving resources because many materials are recycled or reused, or not used at all.
- Ensuring regulatory compliance with pollution prevention laws, as well as other environmental control regulations.
- Saving money spent on purchasing new materials and treating or disposing of waste.

Following are some examples of pollution prevention programs that have been designed to provide leadership in protecting the environment.

**In the seconds it takes you to read this sentence, 24 people will be added to the Earth's population. In six minutes, 1,100. Within an hour, 11,000. By day's end, 260,000. Before you go to bed two nights from now the net growth in human numbers will be enough to fill a city the size of San Francisco. It took four million years for humanity to reach the two billion mark. Only 30 to add a third billion. And now we're increasing by 95 million every single year.**

**No wonder they call it the human race.....**

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## Green Procurement:

Have you taken the time to think about what merchandise and/or equipment you purchase, and how you go about purchasing it? The government has a policy named green procurement and is part of our ESOH management plan.

The Resource Conservation and Recovery Act (Table 1) and Presidential Executive Order 13423 as well as Department of Defense objectives have mandated that defense agencies adopt environmental management systems.

The program is in its beginning stages and much of the tracking to be accomplished through the Department of Defense is not yet in place. This should not keep purchasing agents from investigating compliant forms of procurement. We must move from being a “global consumer to a world citizen” (W.M.. Von Vharen, *ISO 14001 Positioning Your Organization for Environmental Success*, ABS Consulting, 2000).



### **William McDonough**

William McDonough is a leading architect who “treat(s) nature as a model and mentor, not an inconvenience to be evaded and controlled.” He has developed technologies to create ecologically sustainable materials: “his research on fabrics and dyes free of toxins, mutagens, carcinogens, and endocrine disrupting chemicals led to a line of fabric so pure that the effluent water leaving the factory is cleaner than the water going in.”

Founded in 1981, the team of some 40 architects practices ecologically, socially and economically “intelligent” architecture and planning in the United States and abroad. Works include Herman Miller’s Greenhouse factory in Holland, Michigan, and Nike’s European Headquarters in Hilversum, the Netherlands.

In 1996, McDonough became the only individual to receive the Presidential Award for Sustainable Development, the nation’s highest environmental honor, presented by President Clinton in a White House ceremony. He also co-founded McDonough Braungart Design Chemistry, LLC, a product and systems development firm assisting client companies in implementing the firm’s unique designs.

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## Alternative Fuel Source Vehicles:

We have researched the possibility of obtaining alternative fuel vehicles (AFV's) for our use.

The problem remains that some of our sites are remote, and there are no

appropriate refueling stations within the work area. We remain hopeful that we will be able to take advantage of this effective conservation tool.

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### Why Drive an Advanced or Alternative Fuel Vehicle?

- Transportation accounts for more than 67 percent of the oil we consume in the United States – more than we produce. Today, our country imports more than 54 percent of its oil supply, and it's estimated that this could increase to 75 percent by 2010.
- According to the U.S. Federal Highway Administration, the average vehicle (car or light truck) on the road today emits more than 600 pounds of air pollution each year.
- The increased use of fossil fuels during the last century has created an enhanced greenhouse effect, known as global warming.

**By reducing vehicle emissions, AFVs and advanced vehicle technologies help combat both air pollution and global climate change.**

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## Recycling:

The term recycling is defined as a set of processes for reclaiming material that would otherwise be disposed of as a material input into a product or service system. I think each of us has a better understanding of recycling. It is a common term in today's society and one that has taken on an ever-increasing importance. Literally every product, or some portion of it, has the potential to be recycled. The term has taken on a broader meaning and now encompasses reuse. Products change with time, as does our dependence on each of these products. We must learn

to choose our products wisely with forethought of their future. "The right price is one that includes the full cost of a product including all environmentally negative impacts triggered from cradle to grave, those incurred today and those incurred by future generations."

It is our hope that after this training each of you will take the time to investigate those materials you are using and determine if you can either purchase a more environmentally friendly alternative, recycle or reuse them.

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# COMMUNITY OUTREACH

Something possibly every one of us may forget from time to time, is that we are public servants. We are paid to serve the American people and we should do it well!!!

At the very least, this must include communication with the public sector.

your ability to maintain and store material safely. Each of you must be aware of the environmental policy of this organization and how that works within your community. You are a representative of this organization and your actions count. When you depict a positive, open picture of our operations,



## Senator Gaylord Nelson

Senator Nelson instituted one of the most powerful ideas of our times: Earth Day. Inspired by the teach-ins dealing with the Vietnam War, Earth Day was an instant success, drawing 20 million participants the first year (1970). American Heritage Magazine called the first Earth Day “one of the most remarkable happenings in the history of democracy.”

Earth Day has fulfilled Senator Nelson’s goal of “a nationwide demonstration of concern for the environment so large that it would shake the political establishment out of its lethargy and, finally, force this issue permanently onto the national political agenda.”

Senator Nelson *was awarded the Presidential Medal of Freedom in 1995 by President Clinton.*

How are we to know if we are serving the needs of our communities if we fail to ask them? We are members of the greater society, and each of us has our own agenda. It must be our goal to partner with members and groups within our communities to ensure that our own personal/ facility/ neighborhood agendas do not supercede the doctrines stipulated within the our environmental safety and occupational health management policy. At times you may meet with negativity and distrust; however, if you maintain a concise, clear, consistent message, and stand behind it, that attitude oftentimes will change. Although many people may disagree with your policy objectives, they will respect and trust

you can bring about affirmative change.

Remember community involvement does not simply include two parties, it includes many people with many separate ideas. Plan ahead before meeting with your communities and get to know them before negotiating. Try to develop a trusting relationship on both sides of the table. Your relationship will NOT end when the negotiations are over. As a civil servant representing a federal agency, you are a part of the community and you will interact on many levels with these individuals again in the future.

Some other ways of community outreach could include newsletters, open houses, and arbor/earth day

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activities. We challenge each of you to think about ways to inform the public about us. Once you make the initial contacts, we are sure that you will be pleasantly surprised with the support you will receive from your surrounding communities.

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# WHY NOW?

*Presidential Executive Order 13423 (January 24, 2007 “Strengthening Federal Environmental, Energy, and Transportation Management”) as well as Department of Defense objectives have mandated that defense agencies adopt environmental management systems.*

Current thinking realizes that laws and institutions are not enough to bring about true change in society. All federal facilities are readily familiar with individual environmental programs (pollution prevention initiatives or environmental audits). The purpose of an environmental management system is to systematically organize these programs so that we continually improve our environmental performance.

We have chosen to implement two management programs simultaneously, OHSAS 18001 and ISO 14001. ISO is commonly linked to, but is not a strict acronym for, the International Organization for Standardization, located in Geneva, Switzerland. ISO promotes the development and implementation of voluntary international standards, both for particular

products and for environmental/ health and safety issues. ISO 14000 refers to a series of voluntary standards pertaining to the environmental field. Included in the ISO 14000 series are the ISO 14001 EMS Standard Specification and other supporting standards including environmental auditing, environmental performance evaluation, environmental labeling, and life-cycle assessment. OHSAS 18001 refers to a similar series of voluntary standards that address occupational health and safety (OHSAS), and included within that series are OHSAS 18001 Standard Specifications. These comprise procedures to establish an occupational health and safety management system to eliminate or minimize risk to human health and continually improve / audit the OHSAS policy.

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All the ISO standards are developed through a voluntary, consensus-based approach. Each member country of ISO develops its position on the standards, and these positions are then negotiated with other member countries. Draft versions of the standards are sent out for formal written comment and each country casts its official vote on the drafts. Within each country, various types of organizations can and do participate in the process including industry, government (Federal and State), and other interested parties; including non-government states organizations (NGOs).

The ISO 14000 and OHSAS 18001 series of environmental / occupational health and safety management standards are voluntary. While a number of government agencies, including the U.S. EPA and OSHA, are evaluating components of both ISO 14000 and OHSAS 18001, there is a conscious effort to maintain the voluntary status of the standards.

**Many companies have instituted environmental management and pollution prevention systems, some of which are: 3M, Ellwood Texas Forge, Xerox, Hungarian Oil & Gas Company, IBM, and Raval Paper Mills.**

**Each of these companies has instituted policies that reduce or eliminate negative impacts and increase those that are positive. Each of them can document that they have begun paying their debts to the past by reclaiming the purity of the air, water and our living environment. In so doing, they have also increased profits and enhanced employee participation and individual commitment to environmental stewardship.**

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# ESOHMS

## **Implementing ISO 14001 and OHSAS 18001 Management Plan:**

### **Structure and Requirements**

### **Benefits:**

- *Cost Savings/  
Increased  
Profits*
- *Operational  
Improvements*
- *Improved  
Compliance*

## **STRUCTURE AND REQUIREMENTS**

The basic structure of an environmental management and an occupational health and safety management system, as defined by ISO 14001 and 18001, is shown in Figure 1. Within the structure, there are five primary components (environmental commitment/occupational health and safety policy, planning, implementation and operation, checking and corrective action, and management reviews), which interrelate to produce a framework for managing and continually improving a facility's environmental performance / occupational health and safety policy to achieve our policy and business goals.

- Environmental / Occupational Health and Safety Policy establishes and communicates our position and commitment as it relates to the installations' en-

vironmental/ occupational health and safety issues.

- **Planning** – Identifies the organization's environmental / occupational health and safety issues and requirements, and defines the initiatives and resources needed.
- **Implementation and Operation** - Describes the procedures, programs and responsibilities.
- **Checking and Corrective Action** - Regularly monitors and assesses the effectiveness of management activities.
- **Management Review** - High-level evaluation of the management system as a whole to determine its overall effectiveness in terms of driving continual improvement and achieving business goals.

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Within the primary components of the environmental management system are specific elements that define the means for:

- establishing performance standards and goals;
- developing initiatives to achieve these goals;
- building and deploying programs to implement these initiatives;
- conducting routine performance checks to ensure that the goals are being achieved; and
- reviewing progress and performance with senior management.

Compliance with ISO 14001 and OHSAS 18001 includes certification. Accrediting bodies in the United States are the American National Standards Institute (ANSI) and Registrar Accreditation Board (RAB). We are required to demonstrate that we have a WORKING program of the defined management plan and that all components of the program have been addressed. In order to acquire certification we undergo a detailed audit (whether self-declared or third party) to verify that the appropriate steps are being taken and that the management plan is continuously operating. Our registration indicates that we have a system in place to achieve specific criteria. Those elements are presented in Table 2.

**GTE had 600 self-reported violations through their Environmental Management System from 314 facilities in 21 different states resulting in fines of \$52,000. Without self-reporting the EPA estimated their fines would have exceeded \$2.5 million.**

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### **Ray Anderson**

Ray Anderson has been called the “greenest chief executive in America.” He began reducing his company’s waste and conserving energy. At the same time he found that his profits increased. He also spread the word to other companies and consumers worldwide. “The new course we’re on... is to pioneer the next Industrial Revolution: one that is kinder and gentler to the earth.” He strives to move his company to complete sustainability, making product utilizing solar and wind energy, so future generations will still have new materials and energy resources.

## **BENEFITS**

Environmental and occupational health and safety performance is often viewed as a single topic. However, the performance of an organization is the result of many different management choices. When we go back to the environmental and occupational health and safety policy, it states that we will:

- “Continually improve ... environmental performance through training and integrating environmental / occupational health and safety factors into operating procedures.”
- “Assess ... environmental/ occupational health and safety performance on a regular basis, and at all levels within the organization.”
- “Foster dialogue with employees and the public, and respond to their concerns about the potential impacts of our operations.”
- “Promote environmental stewardship through the prevention of pollution.”
- “Provide adequate resources to meet environmental/ occupational health and safety.”

Since this is the commitment we have made, and ISO 14001 and OHSAS 18001 contain elements that address every one of these components, it makes good sense to implement a management system based on these principles. There are also other benefits that are likely to accrue upon implementation of these management

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systems. The following information is based on the experiences of other companies and organizations that have implemented ISO14001 and OHSAS 18001 based management systems:

### **Cost Savings/Increased Profit**

1. Reduction in waste, by-products and energy use often results from examining and scrutinizing procedures and processes inherent in ISO 14001 and OHSAS 18001 based management systems.
2. More efficient means for achieving environmental/occupational health and safety goals are often identified during the process of establishing these management systems. By focusing on goals, and determining the processes needed to meet those goals, many existing procedures and processes can be streamlined or eliminated.
3. Means for increasing efficiency of operations other than the environmental and occupational health and safety functions can be identified, as a result of the need to analyze all operations that have impacts on the environment and occupational health and safety.
4. More effective compliance with applicable environmental laws and regulation can result in a reduction in fines paid for violations.
5. The improved compliance and more effective management can result in reducing incidences that require expenditure of clean-up costs.

6. In many locations, regulatory agencies give precedence to facilities/organizations with an ISO based management program during permit applications.

### **Operational Improvements**

1. An ISO based management system provides clear designation of roles and responsibilities that ensures collaborative efforts towards an agreed upon set of goals and targets, something which does not typically happen in the absence of an ISO based management system.
2. An ISO based management system fosters better communication between the environmental / occupational health and safety staff and the operational staff whose jobs impact these functions. This communication, which may have been limited to implementation of these systems, can result in identification of ways to improve operations and promote teambuilding.
3. An ISO based management system increases awareness of all staff regarding environmental and occupational health and safety issues, and promotes consideration of negative impacts earlier in the process or facility development. This, in turn, allows for these issues to be addressed in a more effective and efficient manner than if they are addressed after process/facility implementation is complete.

4. An ISO based management system requires explicit senior management commitment and periodic review of performance results in consideration of pertinent issues at the top management levels. This allows environmental and health and safety functions to be factored into strategic business decision, which results in more realistic and effective management strategies.

## **EPA Audit Policy**

- Effective January 22, 1996
- When a compliance management system ensures that regulatory violations are self discovered, and corrective action is taken:
  - Gravity-based penalties will not be imposed
  - Criminal sanctions will not be recommended (some conditions and limitations apply)
- As of March 1998, 760 facilities have given voluntary disclosure; 433 resulted in greatly reduced or waived penalties

5. The commitment to continual improvement inherent in an ISO based management system reinforces other efforts devoted to improving quality on a continuous basis.

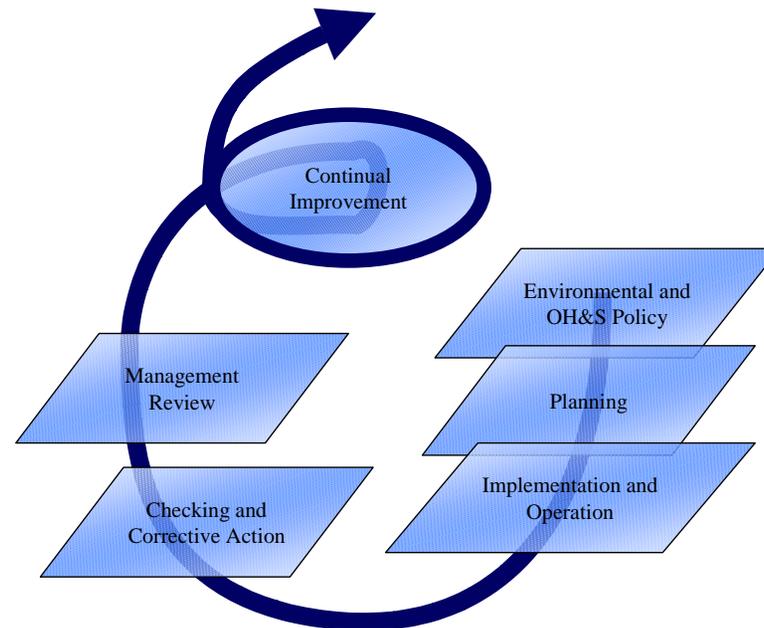
## **Improved Compliance**

An ISO based management system includes elements which will result in more effective compliance with applicable environmental and safety and health regulations. Some ways in which this may occur include the following:

- a) By explicitly requiring the assembly and maintenance of a list of legal and regulatory requirements, an ISO based management system ensures that an organization is fully cognizant of applicable regulatory requirements. By avoiding the situation in which an organization is “blindsided” by becoming aware of a regulatory requirement after events which might trigger that requirement have already occurred, this organization can avoid potential violations, fines and operational upheaval.
- b) An ISO based management system requires designation of responsibilities and development of procedures that address all applicable regulatory requirements. The identification of these responsibilities and development of procedures can result in more streamlined ways for meeting the regulatory requirements, and also reduces the risk that certain requirements will be left unaddressed.
- c) There are a number of jurisdictions in which the presence of an ISO based management system is looked upon favorably by regulatory agencies, in terms of

mitigating potential fines  
associated with violations of  
regulatory requirements, or  
expediting approval of  
permits.

**Figure 1**  
**Five Primary Components of**  
**EMS & OHSAS Management System**



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**TABLE 2**

**ESOHMS SYSTEM ELEMENTS THAT MUST BE  
ACHIEVED FOR ACCREDITATION**

	<b><u>TITLE</u></b>	<b><u>PURPOSE</u></b>
IGD 1001	ISO 14001 Section 4.2: Environmental policy	Define your organization's commitment to the environment and occupational health and safety. Policy should include processes for the prevention of pollution and procedures to eliminate or minimize risks to employees and other interested parties. This policy will provide the framework for the management system.
IGD 1002	ISO 14001-3.1: Auditor	Identify environmental/occupational health and safety attributes of your activities and services. Environmental aspects/ occupational health and safety attributes encompass any activity or service the installation engages in that may interact with the environment or human health and welfare. Effects can be either adverse or beneficial.
IGD 1003	ISO 14001- 4.3.2: Legal and other requirements	Identify and ensure access to relevant laws and regulations.
IGD 1004	ISO 14001-4.3.2: Legal and other requirements	Establish and maintain environmental goals for the organization that are consistent with company policy.
IGD 1005	ISO 14001-4.3.3: Objectives, targets and programme(s)	Plan actions to achieve objectives and targets, including responsibility and time frame.
IGD 1006	ISO 14001-4.4.1: Resources, roles, responsibility and authority	Establish management responsibilities and authority to ensure the environmental and occupational safety and health management plans are implemented and maintained. Ensure resources are available including special skills, and technical and financial support.
IGD 1007	ISO 14001-4.4.2: Competence, training and awareness	Provide training to employees and interested parties so that they are able to carry out their assigned responsibilities.

**TABLE 2 (CONTINUED)**

**ESOHMS SYSTEM ELEMENTS THAT MUST BE  
ACHIEVED FOR ACCREDITATION**

	<u><b>TITLE</b></u>	<u><b>PURPOSE</b></u>
IGD 1008	ISO 14001-4.4.3: Communication	Establish procedures for internal and external communications regarding environmental/occupational health and safety issues. Employees shall be involved and consultation arrangements shall be documented and interested parties informed about the occupational health and safety policy.
IGD 1009	ISO 14001-4.4.4: Documentation	Establish and maintain information that describes interaction of environmental and occupational health and safety elements.
IGD 1010	ISO 14001-4.4.5 : Control of documents	Ensure effective procedures for controlling and accessing system documents and data.
IGD 1011	ISO 14001-4.4.6: Operational control	Identify, plan, and manage operation and activities in line with policy objectives and targets.
IGD 1012	ISO 14001-4.4.7: Emergency preparedness and response	Identify potential emergencies and develop procedures for preventing and mitigating them.
IGD 1013	ISO 14001-4.5.1: Monitoring and measurement	Both qualitative and quantitative measurements of appropriate procedures to assure objectives are met. Must ensure proactive measures of performance are employed for the occupational safety and health program.
IGD 1014	ISO 14001-4.5.2: Evaluation of compliance	Implement and maintain procedures for periodically evaluating compliance with applicable legal requirements
IGD 1015	ISO 14001-4.5.3 : Nonconformity, corrective action and preventive action	Investigate and correct problems and preventing recurrences.

**TABLE 2 (CONTINUED)**

**ESOHMS SYSTEM ELEMENTS THAT MUST BE  
ACHIEVED FOR ACCREDITATION**

	<b><u>TITLE</u></b>	<b><u>PURPOSE</u></b>
IGD 1016	ISO 14001-4.5.4: Control of records	Keep adequate records of program performance, documenting compliance, training, audits, and corrective actions.
IGD 1017	ISO 14001-4.5.5 : Internal audit	Periodically verify that the system is operation as intended and provide information to key management personnel.
IGD 1018	ISO 14001-4.6 : Management review	Top management to review environmental managemeny system at planned intervals to ensure its continuing suitability, adequacy and effectiveness.

## **APPENDIX A**

# **ENVIRONMENTAL SAFETY AND OCCUPATIONAL HEALTH POLICY STATEMENT (ESOH)**



**DEFENSE LOGISTICS AGENCY**  
**HEADQUARTERS**  
**8725 JOHN J. KINGMAN ROAD**  
**FORT BELVOIR, VIRGINIA 22060-6221**

October 24, 2013

**MEMORANDUM FOR ALL DEFENSE LOGISTICS AGENCY (DLA) STRATEGIC MATERIALS**

**SUBJECT: Environmental, Safety and Occupational Health Management System (ESOHMS) Policy**

Environmental, Safety, and Occupational Health (ESOH) management must be a sound, useable business practice for systematically upgrading the overall performance of the DLA Strategic Materials. It must be a daily and active tool used by all to accomplish our mission and meet our strategic goals.

We will continue our commitment to ESOH stewardship by reducing risk and pollution, and assuring compliance with legal and other requirements that relate to our ESOH aspects. Our ESOHMS must be an integral part of our work with contractors, host facility owners, communities, and employees to provide ever-improving support for the war-fighter.

Therefore, I am directing that we maintain, improve, and use the mission-focused ESOHMS in order to conform to the International Organization for Standardization ISO 14001 Standard. To assure that we realize full value from this practice, we will continue to conduct periodic conformance and compliance audits at each manned depot.

We will integrate the ESOHMS into our missions, activities, and functions as a sound business practice for improving overall performance. We will collaborate with the DLA Field Activities and Installation Support to set and implement objectives and targets that improve ESOH and mission performance. Strategic Materials leaders will ensure that this policy is communicated to all employees and contractors who work on our behalf. This policy statement will be posted on the "I Am The Key" Web site to inform the public of our commitment.

We will strive to support our customers, the DLA mission and our strategic goals; and make efforts to continually improve our ESOH management practices. As employees, your active leadership, personal commitment, and involvement are essential to meeting these goals.

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A handwritten signature in cursive script, reading "Ronnie Favors", is positioned above the printed name.

**RONNIE FAVORS**  
Administrator

**APPENDIX B**  
**DICTIONARY OF TERMS**

## APPENDIX B

### DICTIONARY OF TERMS

The glossary may help the reader understand the terminology used in environmental management. Its purpose is to acquaint the reader with basic concepts. It does not represent legal definitions of the terms.

**Absolute:** A chemical substance relatively free of impurities.

**Absorb:** To suck up. The penetration of a solid substance by a liquid as by capillary, osmotic, solvent, or chemical action. See Adsorb.

**Absorbed dose:** Means the energy imparted by ionizing radiation per unit mass of irradiated material. The units of absorbed dose are the rad and the gray (Gy).

**Accreditation:** Procedure by which an authoritative body formally recognizes that a body or person is competent to carry out specific tasks.

**ACGIH:** American Conference of Governmental Industrial Hygienists. An organization of professionals in governmental agencies or educational institutions engaged in occupational safety and health programs. ACGIH develops and publishes recommended occupational exposure limits for chemical substances and physical agents (see TLV). (6500 Glenway Avenue, Bldg. D-7, Cincinnati, OH 45211; [513] 661-7881).

**Acid:** An inorganic or organic compound that (1) reacts with metals to yield hydrogen; (2) reacts with a base to form a salt; (3) disassociates in water to yield hydrogen or hydronium ions; (4) has a pH of less than 7.0; and (5) neutralizes bases or alkaline media. All acids contain hydrogen and turn litmus paper red. They are corrosive to human tissue and are to be handled with care. See Base; pH.

**Acidosis:** A condition of decreased alkalinity of the blood and tissues marked by sickly sweet breath, headache, nausea, vomiting, and visual disturbances; usually the result of excessive acid production. Tissues and CNS functions are disturbed.

**Acrid:** Irritating and bitter.

**Action Level:** The exposure level (the material's concentration in air) at which OSHA regulations to protect employees take effect (29 CFR 1910.1001-1047); e.g., workplace air analysis, employee training, medical monitoring, and record keeping. Exposure at or above the action level is termed occupational exposure. Exposure below this level can also be harmful. This level is generally one half the TLV.

**Active Ingredient:** The ingredient of a product that actually does what the product is designed to do. The remaining ingredients may be "inert".

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**CAUTION**

**Activity:** Is the rate of disintegration (transformation) or decay of radioactive material. The units of activity are the curie (Ci) and the becquerel (Bq).

**Acute Health Effect:** An adverse effect on a human or animal body, with symptoms developing rapidly. See Chronic Health Effect.

**Acute Lethality:** The death of animals immediately within 14 days after a single dose of or exposure to a toxic substance.

**Adsorb:** To collect gas or liquid molecules on the surface of another material. See Absorb.

**Adult:** Means an individual 18 or more years of age.

**Aerosol:** A final aerial (in air or other gas) suspension of liquid (mist, fog), or solid (dust, fume, smoke) particles small enough to stay suspended. See Smoke; Fog; Mist.

**Agent:** Any substance, force, radiation, organism, or influence that affects the body. The effects may be beneficial or injurious.

**Air pollutant:** Any air pollution agent or combination of such agents, including any physical, chemical, biological, or radioactive substance or matter that is emitted into or otherwise enters the ambient air.

**Air pollution:** The presence of contaminant pollutant substances in the air that do not disperse properly and interfere with human health or welfare, or produce other harmful effects.

**Airborne radioactive:** Material means radioactive material dispersed in the air in the form of dusts, fumes, particulate, mists, vapors, or gases.

**Airborne radioactivity:** Area means a room, enclosure, or area in which airborne radioactive materials, composed wholly or partly of licensed material, exist in concentrations:

(1) In excess of the derived air concentrations (See Appendix B, 10 CFR Part 20) or,

(2) To such a degree that an individual present in the area without respiratory protective equipment could exceed, during the hours an individual is present in a week, an intake of 0.6 percent of the annual limit on intake (ALI) or 12 DAC hours.

**ALARA:** Acronym for "as low as is reasonably achievable," means making every reasonable effort to maintain exposures to radiation as far below the dose limits in this part as is practical, consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in the relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest.

**Alkali:** Broadly, any compound having highly basic properties; i.e., one that readily ionizes in aqueous solution to yield OH anions, with a pH above 7, and turns litmus paper blue. Alkalies

are oxides and hydroxides of certain metals and belong to group IA of the periodic table (Li, Na, K, Rb, Cs, Fr). Ammonia and amines may also be alkaline. Alkalies are caustic and dissolve human tissue. Treat alkali burns by quickly washing the afflicted area with large amounts of water for at least 15 minutes. Common commercial alkalies are sodium carbonate (soda, ash), NaOH, lime, lye, potash, caustic soda, KOH, water glass, regular mortar, portland cement, and bicarbonate of soda. See Acid; Base; pH.

**Alopecia:** Loss of hair.

**ALR:** Allergenic effects.

**Ambient:** Usual or surrounding conditions.

**Analgesia:** Loss of sensitivity to pain.

**Anesthesia:** Loss of sensation or feeling. CNS depression.

**Anhydride:** A compound derived from another compound (as an acid) by removing the elements that compose water, i.e. hydrogen and oxygen.

**Anhydrous:** “Without water.” Describes a substance in which no water molecules are present in the form of a hydrate or as water of crystallization.

**Anorexia:** Loss of appetite.

**Anosmia:** Loss of the sense of smell.

**Anoxia:** A lack of oxygen from inspired air (literally, “without oxygen”). See Hypoxia.

**ANSI:** American National Standards Institute. A privately funded organization that identifies industrial/public national consensus standards and coordinates their development. Many ANSI standards relate to safe design/performance of equipment and safe practices or procedures. (1430 Broadway, New York, NY 10018; (212) 642-4900).

**Anthropogenic:** Of, relating to, or resulting from the influence of humans on nature.

**Antidote:** A remedy to relieve, prevent, or counteract the effects of a poison. Eliminating the poison, neutralizing it, or adsorbing it are effective.

**Anuria:** Absence or defective excretion of urine.

**Apnea/Apneic:** Breathing temporarily stopped.

**Appearance:** The physical state of a material; e.g., powder, gas, or liquid. If there is a difference between the appearance of the material and that listed on the MSDS, contact your supervisor.

**Applicant:** Legal entity applying for an environmental label for a product or a range of products and which undertakes the compliance with ecological and product function criteria and the certification and costs involved in the application and awarding of the label.

**AQTX, Aquatic Toxicity:** The adverse effects on marine life that result from exposure to a toxic substance. See TLM.

**Aqueous, aq:** Describes a water-based solution or suspension. Frequently describes a gaseous compound dissolved in water.

**Argyria:** Local or generalized grey-blue impregnation of the body (skin) tissue with silver.

**Article:** A manufactured item that is specifically shaped or formed with its function dependent on its shape or design. It does not release or result in exposure to a hazardous material in normal use. Articles are excluded from hazard laws unless they give off dust or fumes.

**Asbestosis:** Chronic lung disease caused by inhaling airborne asbestos fibers.

**Asphyxiant:** A vapor or gas that can cause unconsciousness or death by suffocation (lack of oxygen). Most simple asphyxiants are harmful to the body they reduce (displace) the available oxygen in the air (normally about 21%) to dangerous levels (18% or lower). Examples of simple asphyxiants are CO<sub>2</sub>, N<sub>2</sub>, H<sub>2</sub>, and He. Chemical asphyxiants like carbon monoxide (CO) reduce the blood's ability to carry oxygen, or like cyanide interfere with the body's utilization of oxygen.

**Aspiration Hazard:** The danger of drawing material into the lungs, leading to an inflammatory response that can be fatal.

**Assessment body:** Third party that assesses products and registers the quality systems of suppliers.

**Assessment system:** Procedural and managerial rules for conducting an assessment leading to issue of a certification document and its maintenance.

**Assessment:** An estimate or determination of the significance, importance, or value of something.

**Asthma:** A disease characterized by recurrent attacks of dyspnea, wheezing, and perhaps coughing caused by spasmodic contracting of the main airways in the lungs.

**ASTM:** American Society for Testing and Materials. An organization that devises consensus standards for materials characterization and use (1916 Race Street, Philadelphia, PA 19103; [215] 299-5400).

**Asymptomatic:** Neither causing not exhibiting symptoms.

**Ataxia:** A loss of muscular coordination.

**atm:** Atmosphere. Pressure measurement. One atm = 14.7 lbs/in<sup>2</sup>. The pressure exerted by the air at sea level that supports a column of mercury 760 mm high (about 30 in), expressed as 760 mm Hg. One torr = 1 mm Hg.

**Atmospheric deposition:** Occurs when pollutants in the air fall on the land or water. Pollutants come from human-made sources such as the burning of fossil fuels, industrial processes, cars, and other forms of transportation, fertilizer, and the volatilization of animal wastes.

**Atrophy:** Reduction in size or function of tissue, organs, or the entire body caused by lack of use.

**Attorney-client privilege:** Client's right to refuse to disclose and to prevent any other person from disclosing confidential communication between the client and the attorney.

**Auditee:** An organization to be audited. May be the same as client.

**Autoignition Temperature:** The minimum temperature at which a substance ignites without application of a flame or spark. So not heat materials to greater than 80% of this temperature.

**Background Radiation:** Means radiation from cosmic sources, naturally occurring radioactive materials, including radon (except as a decay product of source or special nuclear material) and global fallout as it exists in the environment from the testing of nuclear explosive devices. "Background radiation" does not include radiation from source, byproduct, or special nuclear materials regulated by the Commission.

**BAL:** British Anti-Lewisite. A name for the drug dimercaprol, a treatment for toxic inhalations.

**Base:** Substances that (usually) liberate OH anions when dissolved in water and weaker a strong acid. Bases react with acids to form salts and water. Bases have a pH > 7, turn litmus paper blue, and may be corrosive to human tissue. They are also called alkali and caustic. Examples are lye and DRANO™. See Acid; Alkali; pH.

**Baumé, Bé:** An arbitrary scale of specific gravities devised by the French chemist Antoine Baumé(c. 1800; pronounced bo-may) that indicate concentration of materials in a solution.

**BCM:** Blood-clotting mechanism effects.

**BEI, Biological Exposure Indexes:** Numerical values based on procedures to determine the amount of a material the human body absorbs by measuring the materials or its metabolic products in tissue, fluid, or exhaled air. See the ACGIH publication *Documentation of the Threshold Limit values and Biological Exposure Indices*.

**Bioassay:** (radiobioassay) means the determination of kinds, quantifies or concentrations and in some cases the locations of radioactive material in the human body, whether, by direct

measurement (in vivo counting) or by analysis and evaluation of materials excreted or removed from the human body.

**Biodegradable:** An organic material's capacity for decomposition as a result of attack by microorganisms. Sewage-treatment routines are based on this property. Phosphates and chlorinated hydrocarbons (DDT) are not biodegradable.

**Biological diversity:** The genetic variety of faunal and floral species living in the biosphere; critical to maintaining the biosphere's life-sustaining systems.

**BLD:** Blood effects.

**Body Burden:** The total toxic material a person has ingested or inhaled from all sources over time. E.g., lead can be inhaled from gasoline engine exhaust and ingested from drinking water channeled through lead-soldered pipes, lead glazes on dishes, or flakes from painted surfaces, as well as from a variety of industrial operations.

**Boiling Point, BP:** The temperature at which the vapor pressure of a liquid equals the surrounding atmospheric pressure so that the liquid rapidly becomes a vapor. Flammable materials with low BPs generally present special fire hazards. E.g., butane = 31°F, gasoline, BP = 100°F. For mixtures, a range of temperatures is given.

**Bonding:** A safety practice where two objects (tanks, cylinders, etc.) are interconnected with clamps and wire. This equalizes the electrical potential between the objects and helps prevent static sparks that can ignite flammable materials. See Grounding.

**BP:** See Boiling Point.

**Bradycardia:** A slow heartbeat with pulse rate below 60/min.

**British Anti-Lewisite:** See BAL

**Bronchitis:** Inflammation of the bronchial tubes (main airways) in the lungs.

**Btu:** British thermal unit. The quantity of heat required to raise the temperature of 1 lb of H<sub>2</sub>O from 63°F to 64°F. See Calorie.

**Buffer:** A substance that reduces the change in hydrogen ion concentration (pH) otherwise produced by adding acids or bases to a solution.

**Byproduct material means:**

Any radioactive material (except special nuclear- material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or utilizing special nuclear material; and,

The tailings or wastes produced by the extraction or concentration of uranium or thorium from ore processed primarily for its source material content, including discrete surface wastes

resulting from uranium solution extraction processes. Underground ore bodies depleted by these solution extraction operations do not constitute "byproduct material" within this definition.

**°C:** Degrees Celsius (centigrade). Metric temperature scale on which 0 (zero) °C (32°F) equals the freezing point of water. 100°C (212°F) equals the boiling point of water.  $F^{\circ} = C^{\circ} \times 1.8 + 32$ .  $C^{\circ} = (F^{\circ} - 32) \times 5/9$ . See °F.

**c or ca:** Circa, about.

**C:** Indicates continuous exposure when used with toxicological data; e.g., "LD<sub>50</sub> > 5 g/kg, 24 H-C" means continuous exposure for 24 hours. OSHA also uses C to designate ceiling exposure limit. See Ceiling Limit; TLV.

**CAA:** Clean Air Act. Public Law PL 91-604, 40 CFR 50-80. EPA has jurisdiction. Effective December 31, 1970, and significantly amended several times. The regulatory vehicle that sets and monitors airborne pollution hazardous to public health or natural resources. The EPA sets national ambient air-quality standards. Enforcement and issuance of discharge permits are carried out by the states and are called state implementation plans.

**Calibration:** The set of specifications, including tolerances, unique to a particular design, version, or application of a component or component's assembly capable of functionally describing its operation over its working range.

**Calorie:** Unit of heat. The amount of heat required to raise 1 g of water 1°C. See Btu.

**Cancer, Carcinoma:** A malignant tumor or cancer; a new growth made up of cells that tend to grow rapidly, infiltrate other cells, and give rise to metastasis (spreading). Each cancer is believed to originate from a single "transformed" cell that grows (splits) at a fast, abnormally regulated pace, no matter where it occurs in the body. Cancer is the second most common cause of death in the US. The NTP reports that one- to two-thirds of cancers are associated with our environment.

**CAR:** Carcinogenic effects.

**Carcinogen:** A material that either causes cancer in humans, or, because it causes cancer in animals, is considered capable of causing cancer in humans. Findings are based on the feeding of large quantities of a material to test animals or by the application of concentrated solutions to the animals' skin. A material is considered a carcinogen if (1) the International Agency for Research on Cancer (ARC) has evaluated it and found it to be a carcinogen or potential carcinogen; (2) the National Toxicology Program's (NTP) *Annual Report on Carcinogens* lists it as a carcinogen or potential carcinogen; (3) OSHA regulates it as a carcinogen; or (4) one positive study has been published. "Select Carcinogen" is defined in 29 CFR 1910, within OSHA's standard "Occupational Exposures to Hazardous Chemicals in Laboratories," as a substance: a) OSHA regulates as a carcinogen; b) the NT? lists as "Known to be carcinogens;" c) the IARC lists as Group 1, "carcinogenic to humans;" d) the IARC lists as Group 2A or 2B, "reasonably anticipated to be carcinogens." since it causes statistically significant tumor incidence in animals per criteria listed in section 2, paragraph b.

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**CAUTION**

**CAS Registration Number, CAS, CAS RN:** An assigned number used to identify a material. CAS stands for Chemical Abstracts Service, an organization that indexes information published in *Chemical Abstracts* by the American Chemical Society and that provides index guides by which information about particular substances may be located in the abstracts. Sequentially assigned CAS numbers identify *specific* chemicals. The numbers have no chemical significance. The **CAS** number is a concise, unique means of material identification. (Chemical Abstracts Service, Division of American Chemical Society, Box 3012, Columbus, OH 43210; [614] 421-3600).

**Catalyst:** A substance that modifies (slows or quickens) a chemical reaction without being consumed..

**Cataract:** A loss of transparency in the eye's crystalline lens or its capsule.

**Caustic:** See Alkali.

**cc, cm<sup>3</sup>:** Cubic Centimeter.

**CC:** Closed cup. Used to test flash points.

**Ceiling Limit, C:** The concentration that should not be exceeded during any part of the working exposure. "An employee's exposure [to a hazardous material] shall at no time exceed the ceiling value" (OSHA). See TLV-Ceiling Limit.

**Celsius:** See °C.

**Centigrade:** See °C. Celsius is preferred. Centimeter, cm, 1/100 meter. A cm = 0.4 in.

**Centipoise:** A cgs unit of the measure of viscosity equal to 1/100 poise. The viscosity of water at 20°C is almost 1 centipoise.

**CERCLA:** The Comprehensive Environmental Response, Compensation, and Liability Act. The Superfund Law, Public Law PL 96-510, found at 40 CFR 300. The EPA has jurisdiction. Enacted December 11, 1980, and amended eager CERCLA provides for the identification and the cleanup of the hazardous materials that have been released over the land and into the air, waterways, and groundwater. It covers areas affected by newly released materials and older leaking or abandoned dump sites. Report releases of hazardous materials to the National Response Center, (800) 424-8802. CERCLA established the superfund, a trust fund to help pay for the cleanup of hazardous materials sites. The EPA has authority to collect the cleanup costs from those who release the waste material. Cleanup funds come from fines and penalties, from taxes on chemical/ petrochemical feed stocks, and the US Treasury Department. A separate fund collects taxes on active disposal sites to finance their monitoring after they are closed. CERCLA is a result of the serious problems that arose from the release of hazardous materials at the Love Canal area near Niagara Falls, NY, in August 1978.

**Certification:** Procedure by which a third party gives written assurance that a product, process, or service conforms to specified requirements.

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**CAUTION**

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**CFC:** Chlorofluorocarbon. Associated with damage to the Earth's ozone layer.

**CFR:** *Code of Federal Regulations*. A collection of the regulations established by law. Contact the agency that issued the regulation for details, interpretations, etc. Copies are sold by the Superintendent of Documents, Government Printing Office, Washington, DC 20402; (202) 783-3238.

**Chelating Agent:** A chemical compound capable of forming multiple chemical bonds to a metal ion. Used to treat metal poisoning.

**Chemical Cartridge Respirator:** A respirator using various chemical substances to purify inhaled air of certain contaminative gases and vapors. Typically effective for concentrations no more than 10 times the TLV for a half facepiece and 100 times the TLV for a full facepiece, provided the contaminant has warning properties (odor or irritation) near the TLV.

**Chemical Family:** A group of single elements or compounds with a common general name. E.g., acetone, methyl ethyl ketone (NEK), and methyl isobutyl ketone (NUBK) are of the ketone family; acrolein, furfural, and acetaldehyde are of the aldehyde family.

**Chemical Formula:** Gives the number and kind of atoms that comprise a molecule of a material. The chemical formula of water is H<sub>2</sub>O. Each molecule of water is made up of 2 atoms of hydrogen and 1 of oxygen.

**Chemical Hygiene Officer:** Per 29 CFR 1910; OSHA regulation, "Occupational Exposure to Hazardous Chemicals in Laboratories." The designated, qualified employee who assists in the development and implementation of the CHP. See CHP.

**Chemical Name:** The scientific designation of a chemical or a name that clearly identifies the chemical for hazard evaluation purposes.

**Chemical Pneumonitis:** Inflammation of the lungs caused by accumulation of fluids due to chemical irritation.

**Chemical Reactivity:** The ability of a material to chemically change. Undesirable and dangerous effects such as heat, explosions, or the production of noxious substances can result.

**Chemiluminescence:** Emission of light during a noncombustible chemical reaction.

**CHEMTREC:** Chemical Transportation Emergency Center. Established in Washington, DC, by the Chemical Manufacturers Association (CMA) to provide emergency information on materials involved in transportation accidents. Twenty-four hour number: (800) 424-9300. In Washington, DC, Alaska, and Hawaii call (202) 483-7616.

**Chloracne:** An acne like eruption caused by excessive contact with certain compounds.

**CHP, Chemical Hygiene Plan:** Per 29 CFR 1910, OSHA standard; "Occupational Exposures to Hazardous Chemicals in Laboratories." Effective 5/1/90. A written plan that includes specific work practices, standard operating procedures, equipment, engineering

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controls, and policies to ensure that employees are protected from hazardous exposure levels to all potentially hazardous chemicals in use in their work area. This OSHA standard provides for training, employee access to information, medical consultations, examinations, hazard identification procedures, respirator use, and record keeping practices. See E of the Standard.

**Chronic Health Effect:** An adverse effect on a human or animal body with symptoms that develop slowly over a long period of time or that recur frequently. See Acute Health Effect.

**Chronic Toxicity:** Adverse (chronic) effects resulting from repeated doses of or exposures to a material over a relatively prolonged period of time. Ordinarily used to denote effects noted in experimental animals.

**Class:** (or lung class or inhalation class) means a classification scheme for inhaled material according to its rate of clearance from the pulmonary region of the lung. Materials are classified as D, W, or Y, which applies to a range of clearance half-times: for Class D (Days) of less than 10 days, for Class W (Weeks) from 10 to 100 days, and for Class Y (Years) of greater than 100 days.

**Clean technology:** Manufacturing processes or product technologies that reduce pollution or waste, energy use, or material use in comparison to the technologies that they replace.

**Client:** The organization that commissions an audit.

**Climate:** The long-term manifestations of weather.

**Closed Cup:** See CC.

**CNS, Central Nervous System:** Indicates effects on the CNS by the material, including headache, tremors, drowsiness, convulsions, hypnosis, anesthesia, nervousness, irritability, narcosis, dizziness, fatigue, lethargy, peripheral neuropathy, memory loss, impaired concentration, sleep disturbance, etc.

**CO, Carbon Monoxide:** A colorless, odorless, flammable, and very toxic gas produced by the incomplete combustion of carbon compounds and as a byproduct of many chemical processes. A chemical asphyxiant, it reduces the blood's ability to carry oxygen. Hemoglobin absorbs CO 200 times more readily than it does oxygen.

**CO<sub>2</sub>, Carbon Dioxide:** A heavy, colorless gas produced by the combustion and decomposition of organic substances and as a byproduct of many chemical processes. CO<sub>2</sub> does not burn and is relatively nontoxic and unreactive. High concentrations, especially in confined places, can create hazardous oxygen-deficient environments that can cause asphyxiation. CO<sub>2</sub> is 1.5 times as heavy as air, making it useful as a fire-extinguishing agent to block oxygen and smother a fire.

**Code of Federal Regulations:** See CFR.

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**Coefficient of Water/Oil Distribution:** Also called the partition coefficient, it is the ratio of the solubility of a chemical in water to its solubility in oil. Used to indicate how easily the human body can absorb or store a material.

**Collective dose:** The sum of the individual doses received in a given period of time by a specified population from exposure to a specified source of radiation.

**Combustible:** A term the NFPA, DOT, and others use to classify certain materials with low flash points that ignite easily. Both NFPA and DOT generally define *combustible liquids* as having a flash point of 100°F (38°C) or higher. Nonliquid materials such as wood and paper are classified as *ordinary combustibles* by the NFPA. OSHA defines *combustible liquid* within the Hazard Communication Law as any liquid having a flash point at or above 100°F (38°C) but below 200°F (93.3°C). See Flammable.

**Committed dose equivalent:** The dose equivalent to organs or tissues of reference that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.

**Committed effective dose equivalent:** The sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues.

**Common Name:** A designation for a material other than its chemical name, such as code name or code number or trade, brand, or generic name. Also, the "product identifier" in Canadian law.

**Compliance:** An affirmative indication or judgment that the supplier of a product or service has met the requirements of the relevant specifications, contract, or regulation; also the state of meeting the requirements.

**Compressed Gas:** Any material contained under pressure, i.e., dissolved gas or liquefied by compression or refrigeration.

**conc:** Concentration.

**Conformance:** An affirmative indication or judgment that a product or service has met the requirements of the relevant specifications, contract, or regulation; also the state of meeting the requirements.

**Conjunctivitis:** Inflammation of the conjunctiva, the delicate membrane that lines the eyelid and covers the eyeball.

**Conservation:** The collection and application of biological information for the purposes of increasing and maintaining the number of animals within a species and populations of marine mammals at their optimum sustainable population.

**Consumer Products Safety Commission:** See CPSC.

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**Contamination:** Intrusion of an undesirable element, be it physical, chemical, biological, or radioactive; the addition of foreign matter to a substance that reduces the value of the substance, or interferes with its intended use.

**Controlled Area:** An area, outside a restricted area but inside the site boundary, access to which can be limited by the licensee for any reason.

**COR:** Corrosive effects.

**Cornea:** The transparent structure of the external layer of the eyeball.

**Corrective action:** An action taken to eliminate the causes of an existing nonconformity, defect, or other undesirable situation in order to prevent recurrence.

**Correspondent member:** An organization such as a government institute in a lesser-developed country that does not have its own national standards body.

**Corrosion Rate:** Expressed in inches of steel per year, accompanied by temperature.

**Corrosive:** A chemical that causes visible destruction of or irreversible alterations in living tissue by chemical action at the site of contact; a liquid that causes a severe corrosion rate in steel. A waste that exhibits a "characteristic of corrosivity (40 CFR 261.22)," as defined by RCRA, may be regulated by EPA as a hazardous waste.

**CPS:** See Centipoise.

**CPSC:** Consumer Products Safety Commission. A Federal agency responsible for regulating hazardous materials when they are used in consumer goods per the Hazardous Substances Act and Poison Prevention Packaging Act of 1970.

**Cradle-to-grave:** The full life cycle of, for example, a product, beginning with the natural resources and other elements used to create the product and ending with its final deposition.

**Critical Pressure/Critical Temperature:** A temperature above which a gas cannot be liquefied by pressure. The critical pressure is that pressure required to liquefy a gas at its critical temperature.

**Cryogenic:** Relating to extremely low temperature as for refrigerated gases,

**cu m, m<sup>3</sup>:** Cubic meter. m<sup>3</sup> is preferred.

**CUM:** Cumulative effects.

**Cutaneous:** Pertaining to the skin.

**CVS:** Cardiovascular effects.

**CWA:** Clean Water Act. Public Law PL 92-500. Found at 40 CFR 100- 140 and 400-470. Effective November 18, 1972, and amended significantly since then. EPA and Army Corps of

Engineers have jurisdiction. CWA regulates the discharge of nontoxic and toxic pollutants into surface waters. Its ultimate goal is to eliminate all discharges into surface waters. Its interim goal is to make surface waters usable for fishing, swimming, etc. EPA sets guidelines, and states issue permits (NPDES, Natural Pollutant Discharge Elimination System permit) specifying the types of control equipment and discharges for each facility.

**Cyanosis, Cyanotic:** A dark purplish coloration of the skin and the mucous membrane caused by lack of oxygen utilization by the body.

**Dangerously Reactive Material:** A material that can react by itself (e.g., polymerize) or with air or water to produce a hazardous condition. Preventive measures can be taken if you know what conditions may cause the dangerous reaction.

**Dec, Decomp:** Decompose, Decomposition. Breakdown of a material (by heat, chemical reaction, electrolysis, decay, or other processes) into parts, elements, or simpler compounds.

**Declared Pregnant woman:** A woman who has voluntarily informed her employer, in writing, of her pregnancy and the estimated date of conception.

**Decommissioning:** A process by which redundant oil rigs after cessation of production are structurally dismantled, rendering them less harmful to the environment.

**Deep-dose:** Equivalent which applies to external whole-body exposure, is the dose equivalent at a tissue depth of 1 cm.

**Deliquescent:** A term used to characterize water soluble salts (usually powdered) that tend to absorb moisture from the air and to soften or dissolve as a result. See Hygroscopic; Hydrophilic.

**Demulcent:** A material capable of soothing or protecting inflamed, irritated mucous membranes.

**Density:** Ratio of weight (mass) to volume of a material, usually in grams per cubic centimeter or pounds per gallon. One cc of H<sub>2</sub>O weighs 1 g. See Specific Gravity.

**Dermal Toxicity:** Adverse effects resulting from the skin's exposure to a material. Ordinarily used to denote effects on experimental animals.

**Dermal:** Used on or applied to the skin.

**Dermatitis:** Inflammation of the skin.

**Designated area:** An area of (or device within) a lab to be used for work with "select carcinogens", reproductive toxins, and other materials which have a high degree of acute toxicity. An engineering control intended to minimize the potential for employee exposure to hazardous chemicals.

**Diaphoresis:** Perspiration, especially profuse.

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**CAUTION**

**Dilution Ventilation:** See General Ventilation.

**Dose equivalent:** The product of the absorbed dose in tissue, quality factor, and all other necessary modifying factors at the location of interest. The units of dose equivalent are the rem and sievert.

**Dose or radiation dose:** A generic term that means absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, committed effective dose equivalent, or total effective dose equivalent.

**Dose Rate:** A measure of dose per unit of time.

**DOT Identification Numbers:** Four-digit numbers [preceded by UN (United Nations) or NA (North America)] used to identify particular materials for regulation of their transportation. See DOT publications that describe the regulations (49 CFR 172.102). These numbers are called product identification numbers (PINS) under the Canadian Transportation of Dangerous Goods Regulation.

**DOT:** US Department of Transportation. Regulates transportation of materials to protect the public as well as fire, law, and other emergency response personnel. DOT classifications specify appropriate warnings, such as Oxidizing Agent or Flammable Liquid, that must be used. (400 7th Street, SW, Washington, DC 20590).

**Due diligence:** The attention and care required of a person in a given situation; the opposite of negligence.

**Dust:** Solid particles suspended in air produced by some mechanical process such as crushing, grinding, abrading, or blasting. Dusts may be inhalation, fire, or dust-explosion hazards.

**Dyspnea:** A sense of difficulty in breathing; shortness of breath.

**Dysuria:** Difficult or painful urination.

**EC<sub>50</sub>:** (Median) effective concentration. The concentration of a material in water, a single dose of which is expected to cause a biological effect on 50% of a group of test animals.

**Eco-efficiency:** Involves the delivery of competitively priced goods and services that satisfy human needs and bring an improved quality of life, while progressively reducing ecological impacts and resource-intensity throughout the life-cycle, to a level at least in line with the earth's estimated carrying capacity.

**Ecology:** The relationships of living things to one another and to their environment, or the study of such relationships.

**Ecosophy:** Synonymous with deep ecology; involves a shift from science to wisdom. Pursuing an ecosophy is searching for ecologically wise and harmonious living.

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**CAUTION**

**Ecosystem Management:** Management measures to ensure conservation of species belonging to the same ecosystem or associated with or dependent on the target species.

**Ecosystem:** The linked system of interactive relationships among and between organisms and their physical environment in a given geographical unit.

**Edema:** An abnormal accumulation of clear, watery fluid in body tissue.

**Effective dose equivalent:** The sum of the products of the dose equivalent to the organ or tissue and the weighting factors applicable to each of the body organs or tissues that are irradiated.

**Effluent:** Water and quantities, rates and concentrations of chemical, physical, biological, and other constituents that are discharged from point sources.

**Electrolyte:** A nonmetallic substance that conducts an electric current in solution by the movement of ions rather than electrons.

**Embolicism:** Obstruction of a blood vessel by a transported clot, a mass of bacteria, etc.

**Embryo:** An organism in the early stages of development before birth. In humans, the developing child is considered an embryo from conception to the end of the second month of pregnancy.

**Embryotoxin:** A material harmful to a developing embryo at a concentration that has no adverse effect on the pregnant female.

**Emetic:** An agent that induces vomiting.

**Emphysema:** An irreversibly diseased lung condition in which the alveolar walls have lost their resiliency, resulting in an excessive reduction in the lungs' capacity.

**Endothermic:** Process that absorbs heat.

**Engineering Controls:** Engineering control systems reduce Potential hazards by isolating the worker from the hazard or by removing the hazard from the work environment. Methods include ventilation, isolation, and enclosure. This is preferred over personal protective equipment.

**Entitlement:** A philosophy in which human animals are obliged, in the truest sense, to share space and resources with other living beings.

**Environment:** The sum of all external conditions affecting the life, development, and survival of an organism. As defined by section 10 1 (8) of CERCLA, means the navigable waters, the waters of the contiguous zone, and the ocean waters of which the natural resources are under the exclusive management authority of the United States under the Magnuson Fishery Conservation and Management Act, and any other surface water, groundwater, drinking water

supply, land surface or subsurface strata, or ambient air within the United States or under the jurisdiction of the United States.

**Environmental assessment (EA):** An environmental analysis prepared pursuant to the National Environmental Policy Act (NEPA) to determine whether a federal action would significantly affect the environment and thus require a more detailed environmental impact statement.

**Environmental audit:** An independent assessment of the current status of a party's compliance with applicable environmental requirements, or of a party's environmental compliance policies, practices, and controls.

**Environmental auditor:** A person qualified to perform environmental audits and conduct an audit.

**Environmental education:** Educational activities involving elementary, secondary, and postsecondary students, as such terms are defined in the state in which they reside, and environmental education personnel.

**Environmental impact statement (EIS):** A document required of federal agencies by NEPA for major projects or legislative proposals significantly affecting the environment. It describes the positive and negative effects of the undertaking and cites alternative actions.

**Environmental indicator:** Measure, statistic, or value that provides a proximate gauge or evidence of the effects of environmental management programs, or of the state of condition of the environment.

**Environmental justice:** The fair treatment of people of all races, cultures, incomes, and educational levels with respect to the development and enforcement of environmental laws, regulations, and policies. Fair treatment implies that no population should be forced to shoulder a disproportionate share of exposure to the negative effects of pollution due to lack of political or economic strength.

**Environmental labeling - Type I:** Third party certified environmental labeling.

**Environmental labeling - Type II:** Informative self-declaration claims.

**Environmental labeling - Type III:** Quantified product information based on independent verification.

**Environmental movement:** Also known as environmentalism; idea and activities of those concerned with the protection or proper use of the natural environment or natural resources.

**Environmental program:** An all-inclusive term pertaining to any work or activities involving the environment, including but not limited to: characterization of environmental processes and conditions; environmental monitoring; environmental research and development; the design, construction, and operation of environmental technologies; and laboratory operations on environmental samples,

**Environmental reporting:** Communicating information about interrelationships between man and his natural and man-made environment, events, or conditions.

**EP:** Extreme pressure.

**EPA (US) Environmental Protection Agency:** A Federal agency with environmental Protection regulatory and enforcement authority. Administers the CAA, CWA, RCRA, TSCA, and other Federal environmental laws. (400 M Street, SW, Washington, DC 20460; [202] 382-2090).

**EPA, (Canada) Environmental Protection Act.** Federal legislation, administered by Environment Canada, designed to protect the environment.

**Epidemiology:** The study of disease in a general population. Determination of the incidence (rate of occurrence) and distribution of a particular disease (by age, sex, or occupation) may provide information about the causes of the disease.

**Epiphora:** Excessive flow of tears.

**Epistaxis:** Nosebleed.

**Ergonomics:** The study of human characteristics for fit appropriate design of living and work environments.

**Erythema:** Abnormally red skin from capillary congestion.

**Etiology:** All of the factors that contribute to the cause of a disease or an abnormal condition.

**Evaporation Rate:** The rate at which a material vaporizes (volatilizes, evaporates) from the liquid or solid state when compared to a known material's vaporization rate. The evaporation rate can be useful in evaluating a material's health and fire hazards. The known material is usually normal butyl acetate (N-BuAc or n-DuAc), with a vaporization rate designated as 1.0. Vaporization rates of other solvents or materials are then classified as (1) FAST evaporating if greater than 3.0, e.g., methyl ethyl ketone (MEK), 3.8; acetone, 5.6; hexane, 8.3; (2) MEDIUM evaporating if 0.8 to 3.0, e.g., 190-proof (95%) ethyl alcohol, 1.4; VM&P naphtha, 1.4; NUBK, 1.6; (3) SLOW evaporating if less than 0.8, e.g., xylene, 0.6; isobutyl alcohol, 0.6; normal butyl alcohol, OA; water, 0.3; mineral spirits, 0.1.

**Exothermic:** Process that gives off heat.

**Explosive Limits:** See Flammable Limits.

**Explosive:** A material that produces a sudden, almost instantaneous release of pressure, gas, and heat when subjected to abrupt shock, pressure, or high temperature.

**Exposure Limits:** The concentration in workplace air of a chemical *thought* acceptable. This means that most workers can be exposed at the given levels or lower without harmful

effects. The exposure limits in common use are (1) TLVTWA (threshold limit value - time-weighted average); (2) STEL (short-term exposure limit) or STEV (short-term exposure value); (3) C (ceiling value).

**Exposure:** Being exposed to ionizing radiation or to radioactive material.

**External dose:** That portion of the dose equivalent received from radiation sources outside the body.

**Extinguishing Media, Agents:** The type of fire extinguisher or extinguishing method appropriate for a specific material. Some chemicals react violently in the presence of water, so other methods such as the use of foam or CO<sub>2</sub> should be followed.

**°F or F:** Degrees Fahrenheit. See °C.

**f/cc:** Fibers per cubic centimeter of air.

**Fasciculation:** Muscular twitching.

**Fiber:** A basic form of matter, usually crystalline, with a high ratio of length to diameter. Examples: animal (wool); vegetable (cotton); mineral (asbestos, steel); and synthetic (rayon, carbon, high polymers).

**Federal Register:** See FR.

**Fibrosis:** The formation of fibrous tissue, in a response to inhaled material, in excess of amounts normally present in the lung-tissue walls. This reduces the oxygen and CO<sub>2</sub> exchange efficiency and lung capacity.

**Fines:** Finely crushed or powdered material or fibers; especially those smaller than the average in a mix of various sizes.

**Fire Diamond (NFPA Hazard Rating):** Per "NFPA 704" publication. Visual system that provides a general idea of the inherent hazards, and their severity, of materials relating to fire prevention, exposure and control. Preferred reading order-, Health, Flammability, Reactivity, Special.

**Position A - Health Hazard (Blue):** Degree of hazard; level of short-term protection.

- 0 = Ordinary Combustible Hazards in a Fire
- 1 = Slightly Hazardous
- 2 = Hazardous
- 3 = Extreme Danger
- 4 = Deadly

**Position B - Flammability (Red):** Susceptibility to burning.

- 0 = Will Not Burn
- 1 = Will Ignite if Preheated

- 2 = Will Ignite if Moderately Heated
- 3 = Will Ignite at Most Ambient Conditions
- 4 = Burns Readily at Ambient Conditions

**Position C - Reactivity, Instability (Yellow):** Energy released if burned, decomposed, or mixed.

- 0 = Stable and Not Reactive with Water
- 1 = Unstable if Heated
- 2 = Violent Chemical Change
- 3 = Shock and Heat May Detonate
- 4 = May Detonate

**Position D - Special Hazard (White)**

**Position E - If two specific hazards exist.**

OXY	=	Oxidizer			
ACID	=	Acid			
ALKALI	=	Alkali			
COR	=	Corrosive			
W	=	Use	No	Water,	reacts!
	=	Radiation Hazard			

**Fire Point:** The lowest temperature at which a liquid produces sufficient vapor to flash near its surface and continues to burn. Usually 10 to 30°C higher than the flash point.

**Flammable:** Describes any solid, liquid, vapor, or gas that ignites easily and burns rapidly- See combustible.

**Flammable:** Aerosol, A product is considered a flammable aerosol if it is packaged in an aerosol container and can release a flammable material.

**Flammable Gas:** A gas that at ambient temperature and pressure forms a flammable mixture with air at a concentration of 13% by volume or less; or a gas dig at ambient temperature and pressure forms a range of flammable mixtures with air greater than 12% by volume, regardless of the lower limit.

**Flammable Limits (Flammability Limits, Explosive Limits):** The minimum and maximum concentrations of a flammable gas or vapor between which ignition can occur. Concentrations below the lower flammable limit (LFL) are too lean to burn, while concentrations above the upper flammable limit (UFL) are too rich. All concentrations between LFL and UFL are in the flammable range, and special precautions are needed to prevent ignition or explosion.

**Flammable Liquid:** A liquid that gives off vapors readily ignitable at room temperature. Defined by the NFPA and DOT as a liquid with a flash point below 100°F (38°C).

**Flammable Solid:** A solid that ignites readily and continues to burn or is liable to cause fires under ordinary conditions or during transportation through friction or retained heat from manufacturing or processing and that burns so vigorously and persistently as to create a serious transportation hazard. See Combustible.

**Flash Back:** Occurs when a distant spark or ignition source ignites a trail of flammable material. The flame then travels along the trail of the material back to its source.

**Flash Point, FP:** The lowest temperature at which a flammable liquid gives off sufficient vapor to form an ignitable mixture with air near its surface or within a vessel. Combustion does not continue. FP is determined by tests in cups. See Fire Point.

**Foam:** Fire-fighting material consisting of small bubbles of air, water, and concentrating agents. Chemically, the air in the bubbles is suspended in the fluid. The foam clings to vertical and horizontal surfaces and flows freely over burning materials. Foam puts out a fire by blanketing it, excluding air, and blocking the escape of volatile vapor. Its flowing properties resist mechanical interruption and reseal the burning material.

**Fog:** A visible suspension of fine droplets in a gas; e.g., water in air.

**Forestry:** The science and art of cultivating, maintaining, and developing forests.

**Formula Weight:** See Molecular Weight.

**FP:** See Flash Point.

**FR:** The *Federal Register*. A daily publication that lists and discusses Federal regulations. Available from the Government Printing Office.

**Freezing Point:** The temperature at which a material changes its physical state from liquid to solid. This information is important because a frozen material may burst its container or the hazards could change.

**Fugitive Emission:** Gas, liquid, solid, vapor, fume, mist, fog, or dust that escapes from process equipment or a product.

**Full member:** The national body “most representative of standardization in its country.”

**Full Protective Clothing:** Fully protective gear that prevents skin contact with, inhalation of, or ingestion of gases, vapor, liquids, and solids (dusts, etc.). Includes SCBA (self-contained breathing apparatus).

**Fume:** An airborne dispersion consisting of minute solid particles arising from the heating of a solid (such as molten metal, welding). This heating is often accompanied by a chemical reaction where the particles react with oxygen to form an oxide.

**g or gm:** Gram. Metric unit of weight

**Gangrene:** Death of tissue leading to it's rotting.

**Gas:** A formless fluid that occupies the space of its enclosure. It can settle to the bottom or top of an enclosure when mixed with other materials. It can be changed to its liquid or solid state only by increased pressure and decreased temperature.

**Gastric Lavage:** Washing out of the stomach using a tube and fluids. Pumping the stomach.

**Gastroenteritis:** Inflammation of the Stomach and intestine

**Gastrointestinal Tract:** The stomach and intestine as a functional unit. Also GI tract.

**Gavage:** Feeding by means of a stomach tube.

**General Ventilation:** Also known as dilution ventilation. The removal of contaminated air and its replacement with clean air from the general workplace area as opposed to local ventilation, which is specific air changing in the immediate air of a contamination source. An example of local ventilation is a laboratory fume hood.

**Generic Name:** A designation or identification such as code name, code number, trade name of brand name used to identify a chemical by Other than its chemical name.

**GI GIT:** See Gastrointestinal Tract. Gingivitis. Inflammation of the gums.

**GRAS:** Generally recognized as safe. A phrase applied to food additives approved by the FDA.

**Gray:** (Gy) is the Standard International (SI) unit of absorbed dose. One gray is equal to an absorbed dose of 1 Joule/kilogram or 100 rads.

**Green party:** Result of environmental movement, those whose aim is to preserve the planet and its people.

**Green:** Viewed from different perspectives. Consumers: products that pose fewer threats to the environment, i.e., goods that use less energy and fewer resources to produce, which are produced with less pollution, and whose disposal will not contaminate landfills. Group: the coalition of peoples who possess a heightened consciousness towards the human animal and non-human animal condition and environmental pollution and protection. Business: the integration of environmental decisions with economic ones.

**Grounding:** A safety practice to conduct any electrical charge to the ground, preventing sparks that could ignite a flammable material. See Bonding.

**Habitat:** The place of residence of an animal species or community of species.

**Hazard Communication Rule:** See OSHA Act. Requires chemical manufacturers and importers to assess the hazards associated with the materials in their workplace (29 CFR

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**CAUTION**

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1910.1200). Material safety data sheets, labeling and training are all results of this law. You are urged to acquire and become familiar with these regulations. Contact your local OSHA office.

**Hazardous Chemical, Material:** In a broad sense, any substance or mixture of substances having properties capable of producing adverse effects on the health or safety of a human. In 1971 OSHA adopted the following definition in regulations affecting employers in operations subject to the Federal Longshoremen's and Harbor Worker's Compensation Act. "The term *Hazardous Material* means a material which has one or more of the following characteristics: (1) Has a flash point below 140°F, closed cup, or is subject to spontaneous heating; (2) Has a threshold limit value below 500 ppm for gases and vapors, below 500 mg/m<sup>3</sup> for fumes, and below 25 mppcf (million particles per cubic foot) for dusts; (3) Has a single dose oral LD<sub>50</sub> below 50 mg/kg; (4) Is subject to polymerization with the release of large amounts of energy; (5) Is a strong oxidizing or reducing agent; (6) Causes first degree burns to skin [from a] short time exposure, or is systemically toxic by skin contact; or (7) In the course of normal operations, may produce dusts, gases, fumes, vapors, mists, or smokes which have one or more of the above characteristics." Also included are substances that are carcinogens, toxic, irritants, corrosives, sensitizers, and agents which damage the lungs, skin, eyes, or mucous membranes.

**Hazardous Decomposition Products:** Some materials give off hazardous materials when they decompose or burn.

**Hazardous Decomposition:** A breaking down or separation of a substance into its constituent parts, elements, or into simpler compounds accompanied by the release of heat, gas, or hazardous materials.

**Hazardous substance:** Any substance or mixture of substances that is toxic, corrosive, an irritant, a strong sensitizer, flammable or combustible, or generates pressure through decomposition, heat, or other means, if such substances or mixture of substances may cause substantial personal injury or substantial illness during or as a proximate result of any customary or reasonably foreseeable handling or use, including reasonably foreseeable ingestion by children.

**Hazardous Waste Number:** An identification number assigned by the EPA, per the RCRA Law, to identify and track wastes. (40 CFR 261.33, 40 CFR 302A)

**Hematuria:** Blood in the urine.

**Hemolysis, Hemolytic:** Separation of the hemoglobin from red blood corpuscles.

**HEPA:** High-efficiency particulate air filter. Also called "absolute." Has a 99.97% removal efficiency for .03-micron particles.

**Hepatic:** Pertaining to the liver.

**High radiation area:** An area accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.1 rem in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.

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**HMIMS:** The hazardous materials identification system, developed by NPCA to provide information on the acute health ham&, reactivity and flammability encountered in the workplace at room temperatures. A number is assigned to a material indicating the degree of hazard, from 0 for the least up to 4 for the most severe. Letters designate Personal Protective equipment (Details available from Labelmaster, 5724 N Pulaski Rd, Chicago IL, 60646; [312] 478-0900.) See NPCA.

**hr(s):** Hour(s).

**Hydrophilic:** Describing materials having large molecules that tend to absorb and retain water causing them to swell and frequently to become gels. See Deliquescent.

**Hygroscopic:** Readily adsorbing available moisture in any form. See Deliquescent.

**Hyperemia:** Congestion of blood in a body part.

**Hypergolic:** Self-igniting upon contact of its components without a spark or external aid; especially rocket fuel or a propellant that consists of combinations of fuels and oxidizers.

**Hypocalcemia:** Calcium, deficiency of the blood.

**Hypoxia:** Insufficient oxygen, especially applied to body cells. See Anoxia.

**I:** Intermittent.

**IARC:** International Agency for Research on Cancer. One of the three source's that OSHA refers to for data on a material's carcinogenicity. (World Health Organization Geneva, Switzerland; distributed in the USA from 49 Sheridan Avenue, Albany, NY 12210 [518] 436-9686).

**IDLH:** Immediately dangerous to life and health. used to determine selection of a respirator. The maximum concentration from which one could escape within 30 minutes without any escape-impairing symptoms or irreversible health effects. Also, IDLH conditions and conditions that would lead to an IDLH exposure.

**Ignition Temperature:** The lowest temperature at which a combustible material ignites in air and continues to burn independently of the source of heat.

**IMDG Code, IMO Classification:** The IMDG (International Maritime Dangerous Goods) Code assigns divisions, classes, and codes to materials in shipment. These are explosives, flammables, oxidizers, poisons, corrosives, and other regulated substances. The code also assigns labeling and the DOT UN/NA and PINS. (International Maritime Organization, #4 Albert Embankment, London, SE 175R, United Kingdom)

**Impervious:** Describes a material that does not allow another substance to penetrate or pass through it.

**Incompatible:** Describes materials that could cause dangerous reactions and the release of energy from direct contact with one another.

**Individual monitoring:**

- (1) The assessment of dose equivalent by the use of devices designed to be worn by an individual,
- (2) The assessment of committed effective dose equivalent by bioassay (see Bioassay) or by determination of the time-weighted air concentrations to which an individual has been exposed, or

The assessment of dose equivalent by the use of survey data.

**Industrial waste:** Unwanted from an industrial operation, such as liquid wastes, sludge, solid wastes, and hazardous wastes.

**Inert Ingredients:** Anything other than the active ingredient in a product; not having active properties. Inert ingredients may be hazardous. For example, the propellant gas in aerosol spray can products such as hair spray is flammable.

**Inflammable:** Capable of being easily set on fire and continuing to burn, especially violently.

**Inflammation:** A series of reactions produced in tissue by an irritant injury, or infection. An influx of blood and fluids causes redness and swelling.

**Ingestion:** The taking in of a substance through the mouth for digestion.

**Inhalation:** The breathing in of a substance in the form of a gas, vapor, fume, mist, or dust.

**Inhibitor:** A material added to another to prevent an unwanted reaction; e.g., polymerization.

**Inorganic Materials:** Compounds derived from other than vegetable or animal sources that do not generally contain carbon atoms. Some simple carbon compounds are considered inorganic (i.e., carbides, CO<sub>x</sub>, carbonates, CS<sub>2</sub>).

**Insol:** Insoluble.

**Inspection:** Activities such as measuring, examining, testing, or gauging one or more characteristics of a product or service and comparing these with specified requirements to determine conformity.

**Interested party:** Individual or group concerned with or affected by the environmental performance of an organization.

**Internal dose:** That portion of the dose equivalent received from radioactive material taken into the body.

**Internal rate of return:** The discount rate at which the net present value of a project is equal to zero.

**Interstitial Fibrosis:** Scarring of the lungs. IRDS. Primary irritation dose.

**Iridocyclitis:** Inflammation of both the eye's iris and its ciliary body.

**IRR:** Irritant effects. Any irritant effect on the skin, eye, or mucous membrane.

**Irritant:** A noncorrosive material that causes a reversible inflammatory effect on living tissue by chemical action at the site of contact as a function of concentration or duration of exposure.

**Isomers:** Chemical compounds with the same molecular weight and atomic composition but differing molecular structure; e.g., n-pentane and 2-methylbutane.

**Jaundice:** Yellowish discoloration of tissue (skin), whites of eyes (sclerae), and bodily fluids with bile pigment (bilirubin) caused by any of several pathological conditions that interrupt the liver's normal production and discharge of bile.

**Ketosis:** The condition marked by excessive production or accumulation of ketone bodies in the body caused by disturbed carbohydrate metabolism.

**kg, kilogram:** 1,000 grams.

**L:** Liter. Equal to 1.057 quarts.

**Label:** Any written, printed, or graphic sign or symbol displayed on or affixed to containers of hazardous chemicals. A label should identify the hazardous material, appropriate hazard warnings, and name and address of the chemical manufacturer, importer, or other responsible party.

**Laboratory Scale (activity):** The work involves containers of substances used for reactions and transfers that are designed for easy and safe handling by one person. Workplaces that produce commercial quantities of materials are excluded from the definition of "Laboratory."

**Laboratory use:** Of hazardous chemicals is when all of the following conditions are met: a) Chemical manipulations are carried out on a "laboratory scale." b) Multiple chemical procedures or chemicals are used. c) The procedures are neither part of nor simulate a production process. d) Protective lab practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals.

**Laboratory:** Per 29 CFR 1910. A facility where the "laboratory use of hazardous chemicals" occurs, where relatively small quantities of hazardous chemicals are used on a non-production basis.

**Laboratory-type Hood:** Lab device enclosed on five sides with a moveable sash or fixed access port on the sixth side. In operation it draws and then exhausts air from the lab to prevent

or minimize the escape of air contaminants. It enables materials to be manipulated within the hood by the employees hands and arms only. Walk-in hoods are permitted if airflow and exhaust remove contaminants and the employee is not within the enclosure when contaminants are released.

**Lacrimation:** Secretion and discharge of tears.

**Lacrimator:** A material that produces tears.

**Land ethic:** Recognition that destruction of wilderness is more than economic waste; it is a real tragedy, both morally and aesthetically.

**Landfill:** Disposal of trash and waste products at a controlled location that is then sealed and buried under earth. Increasingly seen as a less than satisfactory disposal method because of the long-term environmental impact of waste materials in the ground.

**Latency Period:** The time that elapses between exposure and the first manifestations of disease or illness. Latency periods can range from minutes to decades, depending on the hazardous material.

**Lavage:** A washing of a hollow organ, such as the stomach, using a tube and fluids.

**LC<sub>50</sub>:** Lethal concentration 50, median lethal concentration. The concentration of a material in air that on the basis of laboratory tests (respiratory route) is expected to kill 50% of a group of test animals when administered as a single exposure in a specific time period, usually 1 hour. The LC<sub>50</sub> is expressed as parts of material per million parts of air, by volume (ppm) for gases and vapors, as micrograms of material per liter of air ( $\mu\text{g/L}$ ), or milligrams of material per cubic meter of air ( $\text{mg/m}^3$ ) for dusts and mists, as well as for gases and vapors.

**LC<sub>LO</sub>:** Lethal concentration low. The lowest concentration of a substance in air reported to have caused death in humans or animals. The reported concentrations may be entered for periods of exposure that are less than 24 hours (acute) or greater than 24 hours (subacute and chronic).

**LEL:** See Lower Explosive Limit, Lower Flammable Limit.

**Lesion:** An abnormal changer injury, or damage to tissue or to an Organ-

**Lethargy:** Sluggish feeling.

**Leukemia:** A progressive malignant disease of the blood-forming organs.

**LFL:** See Lower Explosive Limit, Lower Flammable Limit per minute.

**LFN or lfm:** Linear feet per minute.

**Licensed material:** Source material, special nuclear material, or byproduct material received, possessed, used, transferred or, disposed of under a general or specific license by the Commission.

**Life cycle assessment (LCA):** Systematic set of procedures for compiling and examining the inputs and outputs of materials and energy and the associated environmental impacts directly attributable to the functioning of a product or service system throughout its life cycle.

**Lightering:** The effective and cost-efficient transfer of petroleum cargo at sea from a large tanker to smaller ones.

**Limited quantity:** A quantity of radioactive material not exceeding the materials package limits of 49 CFR 173.423 which conforms to the requirements in 49 CFR 173.421.

**Limits of Flammability:** See Flammable Limits.

**Limits:** (dose limits) means the permissible upper bounds of radiation doses.

**Lipid Granuloma:** A mass of chronically inflamed tissue that is usually infective.

**Lipid Pneumonia:** A chronic condition caused by aspiration of oily substances into the lungs.

**Local Ventilation:** The draw off and replacement of contaminated air directly from its source. This type of ventilation is recommended for hazardous airborne materials.

**Low specific activity (LSA):** Material generally means uranium or thorium ores and their physical or chemical concentrates; a material of low activity and heavy weight as noted in 49 CFR 173.403).

**Lower Explosive Limit Lower Flammable Limit:** Refers to the lowest concentration of gas or vapor (% by volume in air) that burns or explodes if an ignition source is present at ambient temperatures. The LEL is constant up to 250°F. Decrease it by 0.7 at temperatures above 250°F because explosibility increases with higher temperature. See Flammable Limits.

**m:** Meter. Metric unit of length equal to 39.37 in.

**m<sup>3</sup> or cu m:** Cubic meters m<sup>3</sup> is preferred.

**Malaise:** A feeling of general discomfort, distress, or uneasiness; an out-of-sorts feeling.

**Marine pollution:** The man-made or man-induced alteration of the physical, biological, its chemical, or radiological integrity of marine water.

**Material Safety Data Sheet:** See MSDS.

**Melting Point:** The temperature at which a solid changes to a liquid.

**Member of the Public:** Any individual except when that individual is receiving an occupational dose.

**Metabolism:** The chemical and physical processes whereby the body functions.

**Metastasis:** The transmission of a disease from one part of the body to another.

**Meter (m):** A measure of length; 100 cm; the equivalent of 39.371 in.

**Methemoglobinemia:** The presence of methemoglobin in the bloodstream caused by the reaction of materials with the hemoglobin in red blood cells that reduces their oxygen-carrying capacity. Methemoglobin is a soluble, brown, crystalline blood pigment that differs from hemoglobin in that it contains ferric iron and is unable to combine reversibly with molecular oxygen.

**mg/kg:** Milligrams per kilogram. Dosage used in toxicology testing to indicate a dose administered per kg of body weight (50 mg = 1 teaspoonful).

**mg/m<sup>3</sup>:** Milligrams per cubic meter of air.  $\text{mg/m}^3 = \text{ppm} \times \text{MW} + 24.45$ .

**Mg:** Milligram (1/1000, 10<sup>-3</sup>, of a gram).

**Microgram (µg):** One one-millionth of a gram.

**Micrometer (µm):** One one-millionth of a meter; occasionally referred to as a micron.

**Millimeter (mm):** 1/1,000 of a meter.

**Min:** Minute.

**Mine Safety and Health Administration:** See MSHA.

**Minor:** An individual less than 18 years of age.

**Miscible:** Describes liquids that can be mixed in any ratio.

**Mist:** Suspended liquid droplets in the air generated by condensation from the gaseous to the liquid state or by mechanically breaking up a liquid by splashing or atomizing.

**Mitigation:** Prevention, elimination, reduction, or control of a project's negative environmental effects by avoiding or minimizing the effects, or by compensating for them by providing substitute resources.

**Mixture:** A heterogeneous association of materials that cannot be represented by a chemical does not undergo chemical change as a result of interaction amongst the mixed materials. The constituent materials may or may not be uniformly dispersed and can usually be separated by mechanical means (as opposed to a chemical reaction). Uniform liquid mixtures are called solutions. "If a hazardous chemical is present in the mixture in reportable quantities

(i.e. 0.1% for carcinogens and 1.0% for other health hazards), it must be reported in less the mixture has been tested as a whole” (OSHA CPL 23-02.38A).

**ml:** Milliliter. A metric unit of capacity equal to 1 cubic centimeter or about 1/16 in<sup>3</sup>.

**MLD:** Mild irritation effects.

**mm Hg:** A measure of pressure in millimeters of a mercury column above a reservoir. See atm.

**MMI:** Mucous membrane effects.

**MOD:** Moderate irritation effects.

**Mole:** The quantity of a chemical substance has a weight in a unit (usually grams) numerically equal to the molecular weight. For example, NaCl has a formula weight of 58.5 (Na, 23, and Chlorine 35.5). One mole of NaCl is 58.5 g.

**Molecular Weight:** The mass in grams per mole of a substance. See Mole.

**Monitoring:** The measurement of radiation levels, concentrations, surface area concentrations or quantities of radioactive material and the use of the results of these measurements to evaluate potential exposures and doses.

**Mppcf:** Millions of particles Per cubic foot of air, based on impinger samples counted by light-field techniques (OSHA).

**MSDS:** Material safety data sheet. OSHA has established guidelines for the descriptive data that should be concisely provided on a data sheet to serve as the basis for written hazards communication programs. The thrust of the law is to have those who make, distribute, and use hazardous materials be responsible for effective communication. See Hazard Communication Rule, 29 CFR, Part 1910.1200, as amended. Section G. See Schedule I, Section 12, of the Canadian Hazardous Products Act.

**MSHA:** Mine Safety and Health Administration. A Federal Agency within the US Department of Labor that devises and promulgates mandatory safety and health rules for mines.

**MSK:** Muscular-skeletal effects.

**Mucous Membrane:** The Mucous-secreting membrane lining the hollow organs of the body; i.e., nose, mouth, stomach, intestine, bronchial tubes, and urinary tract.

**MUT, Mutagen:** A material that induces genetic changes (mutations) in the DNA of chromosomes. Chromosomes are the "blueprints" of life within individual cells.

**MW:** See Molecular Weight.

**n-:** **Normal:** A chemical name prefix signifying a straight-chain structure; i.e., no branches.

**NA Number:** See DOT Identification Numbers.

**NA, ND:** Not applicable, not available; not determined.

**Narcosis:** Stupor or unconsciousness often produced by exposure to organic chemicals.

**National Fire Protection Association:** See NFPA.

**National Toxicology Program:** See NTP.

**Natural resource:** Land, fish, wildlife, biota, air, water, groundwater, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States (including the resources of the exclusive economic zone defined by the Magnuson Fishery Conservation and Management Act of 1976), any state or local government, any foreign government, any Indian tribe, or, if such resources are subject to a trust restriction on alienation, any member of an Indian tribe.

**Nausea:** A tendency to vomit; a feeling of sickness in the stomach.

**NCI:** National Cancer Institute. A part of the National Institutes of Health that studies cancer.

**Necrosis:** Localized death of tissue.

**NEO:** Neoplastic effects; production of tumors.

**Neoplasm:** A new or abnormal tissue growth that is uncontrollable and progressive.

**Nephrotoxic:** Poisonous to the kidney.

**Net present value:** The present value of the future cash flows of an investment less the investment's current cost.

**Neuritis:** Inflammation of the nerves.

**Neutralize:** To render chemically harmless; to return the pH to the neutral level of 7 by adding acid (base) to a basic (acidic) compound.

**NFPA Hazard Rating:** See Fire Diamond.

**NFPA:** National Fire Protection Association. An international voluntary membership organization to promote/improve fire protection and prevention and establish safeguards against loss of life and property by fire. Best known for the *National Fire Codes*, 16 volumes of standards, recommended practices, and manuals developed (and periodically updated) by NFPA committees. NFPA 704M publication is the code for showing hazards of materials using the

familiar diamond-shaped label with appropriate numbers or symbols (NFPA hazard rating). *See Fire Diamond.* (Batterymarch Park, Quincy, MA 02269; (800) 344-3555, [617] 770-3000).

**Ng:** Nanogram. One billionth,  $10^{-9}$ , of a gram.

**NIOSH:** National Institute of Occupational Safety and Health. The agency of the Public Health Service that tests and certifies respiratory and air sampling devices. It recommends exposure limits to OSHA for substances, investigates incidents, and researches occupational safety.

**NO:** Oxides of nitrogen (NO, NO<sub>2</sub>, and N<sub>2</sub>O<sub>4</sub>). They react with the moisture in the respiratory tract to produce acids that corrode and irritate tissue, causing congestion and pulmonary edema. Symptoms of acute exposure can develop over 6 to 24 hours. Chronic exposure to low levels can cause irritation, cough, headache, and tooth corrosion. Exposure to 5 to 50 ppm of NO<sub>2</sub> can cause slowly evolving pulmonary edema.

**NOC:** Not otherwise classified. NOEL. No effect level.

**Non-conformance:** The nonfulfillment of a specified requirement.

**Nonflammable:** Incapable of being easily ignited or burning with extreme rapidity when lighted. Also, a DOT hazard class for any compressed gas other than a flammable one.

**Non-government organization (NGO):** Any scientific, professional, business, or public interest organization that is neither affiliated with nor under the direction of a government.

**Non-renewable resource:** A natural resource that cannot be replaced, regenerated, or brought back to its original state once it has been extracted.

**NOS:** Not otherwise specified.

**NPCA:** National Paint and Coatings Association. The trade association of manufacturers that developed the HMS labeling system. (1500 Rhode Island Avenue, NW, Washington, DC 20005; (202) 462-6272) See HMIS.

**NTP:** National Toxicology Program. Federal activity overseen by the Department of Health and Human Services with resources from National Institutes of Health, the Food and Drug Administration, and the Center for Disease Control. Its goals are to develop tests useful for public health regulations of toxic chemicals, to develop toxicological profiles of materials, to foster testing of materials, and to communicate the results for use by others. (NTP information Office, MD B2-04, Box 12233, Research Triangle Park, NC 27709).

**Nuisance Particulates:** Dusts that do not produce significant organic disease or toxic effect from "reasonable" concentrations and exposures. TLV of 10 mg/m<sup>3</sup> or 30 mppcf.

**Nystagmus:** Spastic, involuntary motion of the eyeballs.

**Occupational Exposure:** See Action Level.

**Occupational Safety and Health Act:** See OSHA Act.

**Occupational Safety and Health Administration:** See OSHA.

**Occupational:** Dose means the dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation or to radioactive material from licensed and unlicensed sources of radiation, whether in the possession of the license or other person. Occupational dose does not include dose received from background radiation or as a member of the general public.

**Odor Threshold:** The lowest concentration of a material's vapor (or a gas) in air that is detectable by odor.

**OEL:** Occupational Exposure Limit See Exposure Limits.

**Oil spill:** Accidental or intentional discharge of oil that reaches bodies of water. Can be controlled by chemical dispersion, combustion, mechanical containment, and/or absorption.

**Oliguria:** Scanty or low volume of urine. **Opaque.** Impervious to light rays.

**Organic Materials:** Compounds composed of carbon, hydrogen, and other elements with chain or ring structures.

**Organic Peroxide:** A compound containing the bivalent - O - O - structure and which is a structural derivative of hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) where one or both hydrogen atoms has been replaced by an organic radical.

**Organization:** Company, operation, firm, enterprise, institution, or association, or part thereof, whether incorporated or not, public or private.

**ORM:** Other regulated material. DOT hazard classification of a particular hazardous material to label it in transport.

**ORM-A:** Materials with an anesthetic, irritating, noxious, toxic, or other property whose leakage can cause extreme discomfort to transportation personnel.

**ORM-B:** Materials (including solids wet with water) that can cause damage to a vehicle if they leak.

**ORM-E:** Materials that are not in any other hazard classification but are subject to DOT regulations.

**OSH Act:** The Occupational Safety and Health Act of 1970. Effective April 28, 1971. Public Law 91-596. Found at 29 CFR 1910, 1915, 1918, 1926. OSHA jurisdiction. The regulatory vehicle to ensure the safety and health of workers in firms larger than 10 employees. Its goal is to set standards of safety that prevent injury and illness among the workers. Regulating employee exposure and informing employees of the dangers of materials are key

factors. This act established the Hazard Communication Rule (29 CFR 1910.1200). See Hazard Communication Rule for details.

**OSHA Flammable/Combustible Liquid Classification:** (29 CFR 1910.106). Flammable/combustible liquid is a standard classification used to identify the risks of fire or explosion associated with a liquid. Class I Flammable Liquids (with a flash point below 100°F [38°C]) are divided into the following: class IA--flash point below 73°F (22.8°C), boiling point below 106°F (38°C); class IB --flash point below 73°F (22.8°C), boiling point at or above 100°F (38°C); and class IC--flash point at or above 73°F (22.8°C), boiling point below 100°F (38°C). Combustible liquids (with a flash point at or above 100°F) are divided into two classes: class II, with flash point at or above 100°F (38°C) and below 140°F (60°C), except any mixture having components with flash points of 200°F (93.3°C) or higher, the volume of which makes up 99% or more of the total volume of the mixture; and class III, with flash point at or above 140°F (60°C). Class III liquids are divided into two subclasses: class IIIA. with flash point at or above 140°F (60°C) and below 200°F (93.3°C), except any mixture having components with flash points of 200°F (93.3°C) or higher, the volume of which makes up 99% or more of the total volume of the mixture; and class HIB, with flash point at or above 200°F (93.3°C).

**OSHA:** The Occupational Safety and Health Administration. Part of the US Department of Labor. The regulatory and enforcement agency for safety and health in most US industrial sectors. (Documents are available from the OSHA Technical Data Center Docket Office, Rm N-3670, 200 Constitution Ave, NW, Washington, DC 20210; [2021 523-7894.]

**Oxidation:** Oxidation is a reaction in which a substance combines with oxygen or some other oxidizer.

**Oxide Pox:** Dermatitis caused by contact with oxides under poor personal hygienic conditions.

**Oxidizer:** The DOT defines an oxidizer or oxidizing material as a substance that yields oxygen readily to stimulate the combustion (oxidation) of organic matter. Chlorate (ClO<sub>3</sub>), permanganate (MnO<sub>4</sub>), and nitrate (NO<sub>3</sub>) compounds are examples of oxidizers. Note that they all contain oxygen (O).

**Oxidizing Agent:** A chemical or substance that brings about an oxidation reaction. The agent may (1) provide the oxygen to the substance being oxidized (in which case the agent has to be oxygen or contain oxygen), or (2) receive electrons being transferred from the substance undergoing oxidation. (Chlorine is a good oxidizing agent for electron-transfer purposes, even though it contains no oxygen.) See Reducing Agent.

**Palpitation:** Irregular, rapid heartbeat.

**Parathesia:** A sensation of prickling, tingling, or creeping on the skin that has no objective cause.

**Particulate:** Small, separate pieces of an airborne material. Dusts, fumes, smokes, mists, and fogs are examples. Generally, anything that is not a fiber and has an aspect ratio of 3 to 1. Partition Coefficient. See Coefficient of Water/Oil Distribution.

**Payback:** The time period required for revenues or cost savings to equal costs.

**PCB:** Polychlorinated biphenyl. Pathogenic and teratogenic compound used as a heat-transfer medium. It accumulates in tissue. PCBs are hazardous. Their handling is regulated by law. See 40 CFR Part 761.

**PEL:** Permissible exposure limit. Established by OSHA. This may be expressed as a time-weighted average (TWA) limit or as a ceiling exposure limit that legally must never be exceeded instantaneously even if the TWA exposure limit is not violated. OSHA PELs have the force of law. Note that ACGIH TLVs and NIOSH RELs are recommended exposure limits that may or may not be enacted into law by OSHA.

**Pensky-Martens Closed Cup or Closed Tester:** See PMCC.

**Percent Volatile:** Percent volatile by volume. The percentage of a liquid or solid (by volume) that evaporates at an ambient temperature of 70°F (20°C) unless some other temperature is stated. E.g., gasoline and paint thinner (mineral spirits) are 100% volatile; their individual evaporation rates vary, but over a period of time each evaporates completely. This physical characteristic reflects the potential for releasing harmful vapor into the air.

**Performance standard:** Regulatory requirement limiting the concentrations of designated organic compounds, particulate matter, and hydrogen chloride in emissions from incinerators.

**Permissible Exposure Limit:** See PEL.

**Permit:** An authorization, license, or equivalent control document issued by EPA or an approved state agency to implement the requirements of an environmental regulation.

**Personal Hygiene:** Precautionary measures taken to maintain good health when exposed to potentially harmful materials. This includes keeping hands, other parts of the body, work clothing, and equipment free of a material's residue, as well as not eating, drinking, applying makeup, or using toilet facilities where it is in use.

**Personal Protective Equipment:** See PPE.

**pH:** A scale 0 to 14 that represents the acidity or alkalinity of an aqueous solution. Pure water has a pH of 7. Substances in an aqueous solution ionize to various extents giving different concentrations of H and OH ions. The strongest acids have an excess of H ions and a pH of 1 to 3 (HCl, pH= 1). The strongest bases have an excess of OH ions and a pH of 11 to 13 (NaOH, pH = 12). The pH scale is logarithmic and the intervals are exponential, so the progression of values represents far greater concentrations than one would suspect, i.e., pH of 3~10,000 to 1 ratio of H ions, while a pH of 4~1000 to 1. pH of 5~100 to 1.

**Phlegm:** Thick mucous from the respiratory passage.

**Photophobia:** Intolerance to light.

**Physical Hazard:** A substance for which there is valid evidence that it is a combustible liquid, compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (re-active), or water reactive.

**Physical State:** The condition of a material; i.e., solid, liquid, or gas, at room temperature.

**PIN:** Product identification number. A four-digit number, prefaced by UN or NA, used in Canada under the Transportation of Dangerous Goods Regulation for use by emergency personnel to identify a material in the event of an accident.

**Planned special exposure:** An infrequent exposure to radiation, separate from and in addition to the annual dose limits.

**PMCC:** Pensky-Martens closed cup. One of several types of apparatus for determining flash points. The Pensky-Martens closed tester (ASTM D93-79) used for liquids that have a viscosity of 45 SUS (Saybolt universal seconds) one more at 100°F (38°C), a flash point of 200°F (93.6°C) or higher, contain suspended solids, or form surface films.

**Pneumoconiosis:** A respiratory tract and lung condition caused by inhalation and retention of irritant mineral or metallic particles. An X ray can detect changes, which include fibrosis, emphysema.

**Pneumonia:** Inflammatory lung disease caused by microorganisms, virus, and chemical or physical irritants.

**PNS:** Peripheral nervous system effects.

**Poison Control Center:** Provides medical information on a 24-hour basis for accidents involving ingestion of potentially poisonous materials. Call your area's largest hospital to find the one nearest to you.

**Poison, Class A:** A DOT term for an extremely dangerous poison such as a poisonous gas or liquid of such a nature that a very small amount of the gas or vapor of the liquid mixed with air is dangerous to life. E.g., phosgene, cyanogen, hydrocyanic acid, and nitrogen peroxide.

**Poison, Class B:** A DOT term for liquid, solid, paste, or semisolid substances other than class A poisons or irritating materials known or presumed on the basis of animal tests to be so toxic to man as to afford a hazard to health during transportation.

**Pollutant:** Dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical waste, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water.

**Pollution prevention:** Active process of identifying areas, processes, and activities that create excessive waste by-products for the purpose of substitution, alteration, or elimination of the process to prevent waste generation.

**Pollution:** The presence of matter or energy whose nature, location, or quantity produces undesirable effects.

**Polymerization:** A chemical reaction in which one or more small molecules combine to form larger molecules. A *hazardous polymerization* is such a reaction that takes place at a rate that releases large amounts of energy that can cause fires or explosions or burst containers. Materials that can polymerize may contain inhibitors that can delay the reactions.

**Pour Point:** The temperature at which a liquid either congeals or flows.

**PO<sub>x</sub>:** Oxides of phosphorus-

**ppb:** Parts per billion, by volume.

**PPE:** Personal protective equipment. Devices or clothing worn to help insulate a worker from direct exposure to hazardous materials. Examples include gloves and respirators.

**ppm:** parts per million. "Parts of vapor or gas per million parts of contaminated air by volume at 25°C and 1 torr pressure" (ACGIH).

$$\text{ppm: } (\text{mg/m}^3) \times 24.45 + \text{MW.}$$

**ppt:** Parts per trillion, by volume.

**Precautionary principle:** Policy or other action taken before the underlying science has reached absolute clarity or certainty in order to prevent possible catastrophic outcomes.

**Precordial:** In front of the heart, stomach.

**Preservation:** The act of maintaining an area for the protection of wildlife or natural resources.

**Preventive action:** Action implemented to prevent a nonconformance.

**Procedure:** A specified way to perform an activity.

**Process:** A set of interrelated resources and activities that transform inputs into outputs.

**Product Identification Number:** See PIN.

**Product:** Goods and services for consumer, commercial, and industrial purposes.

**Prostration:** Physical exhaustion, incapacitation.

**Proteinuria:** Presence of protein in the urine.

**psia:** Pounds per square inch absolute.

**Psychotropic, PSY:** Acting on the mind.

**Public dose:** The dose received by a member of the public from exposure to radiation or radioactive material released by a licensee, or to any other source of radiation under the control of a licensee. It does not include occupational dose or doses received from background radiation.

**PUL:** Pulmonary systems effects. Effects on respiration and respiratory pathology.

**Pulmonary Edema:** Fluid in the lungs.

**Purge:** To clean, clear, or empty of material.

**Pyrolysis:** A chemical decomposition or breaking apart of molecules produced by heating.

**Pyrophoric:** Describes materials that ignite spontaneously in air below 130°F (54°C). Occasionally friction ignites them.

**Quality assurance/quality control:** A system of procedures, checks, audits, and corrective actions to ensure that all research designs and technical, operational, monitoring, and reporting activities are of the highest achievable quality.

**Rad:** The special unit of absorbed dose. One rad is equal to an absorbed dose of 100 ergs/gram or 0.01 joule/kilogram or 0.01 gray.

**Radiation area:** An area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.005 rem (0.05 mSv) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.

**Radiation:** (ionizing radiation) means alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. Radiation, as used in this program, does not include non-ionizing radiation, such as radio- or microwaves, or visible, infrared, or ultraviolet light.

**RBC:** Red blood cell effects.

**RCRA Hazardous Waste:** A material designated by RCRA as hazardous waste and assigned a number to be used in record keeping and reporting compliance (e.g., D003, F001, U169).

**RCRA:** Resource Conservation and Recovery Act, PL 94-580. Found at 40 CFR 240-271. EPA has jurisdiction. Enacted November 21, 1976, and amended since. RCRA's major emphasis is the control of hazardous waste disposal. It controls all solid-waste disposal and encourages recycling and alternative energy sources. In 1984 the USA generated 265 million tons of hazardous waste.

**Reactive Material:** A chemical substance or mixture that vigorously polymerizes, decomposes, condenses, or becomes self-reactive due to shock, pressure, or temperature. Includes materials or mixtures that fall within any of these categories: (1) explosive material -- a substance or mixture that causes sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden adverse conditions; (2) organic peroxide -- an organic compound that contains the bivalent -O-O- structure, which can be considered a structural derivative of hydrogen peroxide, in which one or both of the hydrogen atoms has been replaced by an organic radical; (3) pressure-generating material -- a substance or mixture that may spontaneously polymerize with an increase in pressure unless protected by the addition of an inhibitor or by refrigeration or other thermal control; decompose to release gas in its container, or comprise the contents of a self-pressurized container, (4) water-reactive material -- a substance or mixture that reacts with water to release heat or a flammable, toxic gas.

**Reactivity:** Describes a substances tendency to undergo chemical reaction either by itself or with other materials with the release of energy. Undesirable effects such as pressure buildup; temperature increase; or formation of noxious, toxic, or corrosive byproducts may occur because of the substances reactivity to heating, burning, direct contact with other materials, or other conditions in use or in storage. A solid waste that exhibits a "characteristic of reactivity," as defined by RCRA, may be regulated (by the EPA) as a hazardous waste and assigned the number D003.

**Reagent:** Substance used in a chemical reaction to produce another substance or to detect its composition.

**Recommended Exposure Limit:** See REL.

**Recycling:** Set of processes for reclaiming material that would otherwise be disposed of as a material input to a product or service system.

**Reducing Agent:** In a reduction reaction (which simultaneously with an oxidation reaction), the reducing agent is the chemical or substance that (1) combines with oxygen or (2) loses electrons to the reaction. See Oxidation; Oxidizing Agent.

**Registration:** Procedure by which a body indicates relevant characteristics of a product, process, or service or particulars of a body or person, and then includes or registers the product. Process or service in an appropriate publicly available list.

**REL:** The NIOSH REL (Recommended Exposure Limit) is the, highest allowable airborne concentration that is not expected to injure a worker. It may be expressed as a ceiling limit or as a time-weighted average (TWA), usually for 10-hour work shifts.

**Rem:** The special unit of any of the quantities expressed as dose equivalent The dose equivalent in rems is equal to the absorbed dose in rads multiplied by the quality factor, 1 rem = 0.01 sievert (SV).

**Renewable resource:** A natural resource that is capable of regeneration.

**Reportable Quantity:** See RQ.

**Reproductive Health Hazard/Toxin:** Any agent that has a harmful effect on the adult male or female reproductive system or the developing fetus or child. Such hazards affect people in several ways, including loss of sexual drive, mental disorders, impotence, infertility, sterility, mutagenic effects on germ cells, teratogen effects on the fetus, and transplacental carcinogenesis.

**Resource Conservation and Recovery Act:** See RCRA.

**Resource:** A reserve source of supply such as a material or mineral.

**Resourcism:** Environmental protection policy relying on free-market forces and cost-benefit analysis.

**Respirator:** Any of a variety of devices that limit the inhalation of toxic materials. They range from disposable dust masks to self-contained breathing disposable and limitations. Their use is covered by OSHA, 29CFR1910.134. See SCBA, Chemical Cartridge Respirator.

**Respiratory System:** The breathing system, including the lungs and air passages (trachea or windpipe, larynx mouth, and nose), as well as the associated system of nerves and circulatory supply.

**Responsible care:** Comprehensive guidelines for environmental management systems adopted by Chemical Manufacturers Association (CMA) in 1988. Participation by individual businesses is an obligation of membership in the CMA.

**Restricted:** Area means an area, access to which is limited by the licensee for the purpose of protecting individuals against risks from exposure to radiation.

**Risk assessment:** Technique to quantify risks and thus provide some guidance as to which environmental problems need the most prompt attention and how they might be addressed.

**Routes of Entry:** To do bodily damage, a material must contact the body. The method bodily contact is called the route of entry. The routes of entry are (1) absorption (eye or routes of eye or skin contact); (2) ingestion; and (3) inhalation.

**RQ:** Reportable, Quantity. The amount of a material that when spilled must be reported to the DOT (Section 311 of the Clean Water Act).

**RTECS:** Registry of Toxic Effects of Chemical Substances, published by NIOSH. Presents basic toxicity data on thousands of materials. Its objectives is to identify "all known toxic substances" and to reference the original studies.

**Saint Andrew's Cross X:** Used in packaging for transport; means harmful - stow away from foodstuffs. (IMO, Material Class 6.1, Group III).

**SARA:** Superfund Amendments and Reauthorization Act. Signed into law October 17, 1986. Title III of SARA is known as the Emergency Planning and Community Right-to-Know Act of 1986. It is a revision and extension of CERCLA. SARA is intended to encourage and support local and state emergency planning efforts. It provides citizens and local

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governments with information about potential chemical hazards in their communities. SARA calls for facilities that store hazardous materials to provide officials and citizens with data on the types (flammables, corrosives, etc.); amounts on hand (daily, yearly); and their specific locations. Facilities are to prepare and submit inventory lists, MSDSs, and tier 1 and 2 inventory forms. The disaster in Bhopal, India, in 1987 added impetus to the passage of this law.

**SCBA/SCBAF:** Self-contained breathing apparatus. Breathing apparatus with full facepiece and an independent supply of air or oxygen.

**SCC:** See SETA, SETAFLASH Closed Tester.

**Sclerae:** The tough, white, fibrous covering of the eyeball.

**Select Carcinogen:** See Carcinogen.

**Sensitization:** A state of immune-response reaction in which further exposure elicits an immune or allergic response. A person previously exposed to a certain material is more sensitive when further exposed to it.

**Sensitizer:** A material that on first exposure causes little or no reaction in man or test animals, but which on repeated exposure may cause a marked response not necessarily limited to the contact site. Skin sensitization is the most common form. Respiratory sensitization to a few chemicals is also known to occur.

**SETA, SETA FLASH Closed Tester:** Used to measure flash points in liquids in the 32 to 230°F range (ASTM D 3278-82).

**Shallow-dose equivalent:** Applies to the external exposure of the skin or an extremity is taken as the dose equivalent at a tissue depth of 0.007 centimeter averaged over an area of 1 square centimeter.

**Siderosis:** Pneumoconiosis caused by the inhalation of iron particles. Also, tissue pigmentation caused by contact with iron.

**Sievert:** (Sv) is the Standard International (SI) unit of any of the quantities expressed as dose equivalent. The dose equivalent in sieverts is equal to the absorbed dose in grays multiplied by the quality factor, 1 Sv = 100 rems.

**Silicosis:** A condition of massive fibrosis of the lungs causing shortness of breath because of prolonged inhalation of silica dusts.

**Site boundary:** The line beyond which the land or property is not owned, leased, or otherwise controlled by the licensee.

**Skin:** Notation indicating possible significant contribution to overall exposure to a material by way of absorption through the skin, mucous membranes, and eyes by direct or airborne contact.

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**SKN:** Skin effects; e.g., erythema, rash, sensitization of skin.

**Slurry:** A pourable mixture of solid and liquid.

**Smoke:** Dry particles and droplets (usually carbon or soot) generated by incomplete combustion of an organic material combined with and suspended in the gases from combustion.

**Soln:** Solution. A uniformly dispersed mixture. Solutions are composed of a solvent (water or another fluid, for example) and a dissolved substance, called the solute.

**Solubility in Water:** A term expressing the percentage of a material (by weight) that will dissolve in water at ambient temperature. Solubility information is useful in determining cleanup methods for spills and fire-extinguishing methods for a material. Solubility is expressed as *negligible*, less than 0.1 percent; *slight*, 0.1 to 1.0 percent; *moderate*, 1 to 10 percent; *appreciable*, more than 10 percent; *complete*, soluble in all proportions. Best units of measure are g/l. Reported values can be converted:  $\text{g}/100\text{m} \times 10 = \text{g}/\text{l}$ ;  $\text{g}/100\text{cc} \times 10 = \text{g}/\text{l}$ ;  $\text{g}/\text{gH}_2\text{O} \times 1000 = \text{g}/\text{l}$ .

**Solution:** See Soln.

**Solvent:** A material that can dissolve (reduce to molecular form) other materials to form a uniform mixture. Water can be a solvent.

**Soot:** Fine particles, usually black, formed by combustion (complete or incomplete) and consisting chiefly of carbon. Soot gives smoke its color.

**SO<sub>x</sub>:** Oxides of sulfur where x equals the number of oxygen atoms.

**Source material means:**

- (1) Uranium or thorium or any combination of uranium and thorium in any physical or chemical form; or
- (2) Ores that contain, by weight, one-twentieth of 1 percent (0.05 percent), or more, of uranium, thorium, or any combination of uranium and thorium (see 40 CFR 40.4). NOTE Source material does not include special nuclear material.

**Spasm:** An involuntary, convulsive muscular contraction.

**SPCC:** Spill Prevention, Control, and Countermeasure plan.

**Specific Gravity:** Describes the density (or heaviness) of a material and is expressed as a ratio of the density (d) of a substance (at °F/°C) to a specified reference substance (at °F/°C). Water (d = 1g/cc, at 39°F/4°C) is the density reference for solids and liquids while air (d = 1.29 g/l, at 32°F/°C and 760 mm) is the density reference for gases. Essentially, specific gravity for solids and liquids numerically equals density. For example, a solid or liquid with a 1.2 g/cc density has a specific gravity of 1.2 (1.2 ÷ 1.0 = 1.2). However, the specific gravity for gases does not equal density since air has a density of 1.29 g/l. For example hydrogen has a density of 0.089 g/l with a specific gravity of 0.069, (0.089g/l ÷ 1.29 g/l). Specific gravity is an important

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fire suppression and spill cleanup consideration because most (not all) flammable liquids have less than a 1.0 specific gravity and, if insoluble, float on water.

**Specification:** A clear and accurate description of the technical requirements for materials, products, or services, identifying the minimum requirements for quality and constrictions of materials and equipment necessary for an acceptable product. In general, specifications are in the form of written descriptions, drawings, prints, commercial designations, industry standards, and other descriptive references.

**Stability:** An expression of the ability of a material to remain unchanged. For MSDS purposes a material is stable if it remains in the same form under expected and reasonable conditions of storage or use. Conditions such as temperatures above 150°F or shock from being dropped that may cause instability (dangerous change) are stated on the MSDS. See Unstable.

**Stakeholder:** That group or organization having an interest or stake in a company's EMS program (e.g., regulators, shareholders, customers, suppliers, special interest groups, residents, competitors, investors, bankers, media, lawyers, insurance companies, trade groups, unions, ecosystems, cultural heritage, and geology).

**STEL:** Short-term exposure limit; ACGIH terminology. See TLV-STEL.

**STEV:** Short-term exposure value. See TLV.

**Stomatitis:** Inflammation of the mucous membrane of the mouth.

**Stupor:** Partial or nearly complete loss of consciousness.

**Subcutaneous:** Beneath the skin.

**Sublime:** To change from the solid to the vapor phase without passing through the liquid phase. Dry ice exhibits sublimation.

**Subpart Z:** See Z List.

**Subscriber member:** A category of membership designed to accommodate countries with relatively small economies.

**Superfund Amendments and Reauthorization Act:** See SARA, CERCLA.

**Supplier:** An organization that provides a product to the consumer.

**Survey:** An evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation. When appropriate, such an evaluation includes a physical survey of the location of radioactive material and measurements or calculations of levels of radiation, or concentrations or quantities of radioactive material present.

**Sustainable development:** A process in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with the needs of future generations as well as those of present generations.

**Sustainable yield:** Achievement of a high-level annual or regular periodic output of various renewable resources without impairment of the productivity of the land.

**Sustainable:** Capable of being continued indefinitely (e.g., the sustainable yield of a forest is equivalent to the amount that grows back).

**Synergy:** An interaction of materials to give a result different from either material alone. For example, both smoking and exposure to asbestos can cause lung disease; however, if an individual smokes and is exposed simultaneously to asbestos, the danger of lung disease increases dramatically.

**Synonyms:** Alternative names by which a material may be known.

**SYS:** Saybolt Universal Seconds. A unit measure of viscosity determined by the number of seconds required for an oil heated to 130°F (lighter oils) and 210°F (heavier oils) to flow through a standard orifice and fill a 60-ml flask.

**SYS:** Systemic effects. Effects on the entire body.

**Tachycardia:** Excessively rapid heartbeat, with a pulse rate above 100.

**Tachypnea:** Increased rate of respiration.

**Tag Closed Cup:** See TCC or TCT.

**Tag Open Cup:** See TOC.

**Tag Open Tester:** An open-tank tester for liquids with low flash points. See TCC or TCT.

**Target Organ Effects:** Chemically caused effects from exposure to a material on specifically listed organs and systems such as the liver, kidneys, nervous system, lungs, skin, and eyes.

**TCC or TCT:** Tag (Tagliabue) closed cup or Tag closed tester. One of several types of apparatus for determining flash points. The Tag closed tester, per ASTM D56-79, is intended for testing liquids with a viscosity of less than 45 SUS at 100°F (38°C) and a flash point below 200°F (93.4°C). Liquids should not have suspended solids or form surface films.

**TC<sub>LO</sub>:** Toxic concentration low. The lowest concentration of a substance in air to which humans or animals have been exposed for any given period of time that has produced any toxic effect in humans or produced a tumorigenic or reproductive effect in animals or humans.

**TDL:** Toxic dose level.

**TD<sub>LO</sub>:** The lowest dose of a substance introduced by any route other than inhalation over any given period of time and reported to produce any toxic effect in humans or to produce tumorigenic or reproductive effects in animals or humans.

**Temp:** Temperature.

**TER, Teratogen:** An agent or material causing physical defects in a developing embryo.

**TFX:** Toxic effects. Used to introduce the principle organ system affected as reported or its pathology. See RTECS.

**Third party:** Person or legal entity recognized as being independent of the parties involved in the sale of a product. The practitioner, or its agent, is a third party. Suppliers or producers are the first party and consumers the second party.

**Threshold Limit Value:** See TLV.

**Time-Weighted Average:** See TLV-TWA.

**Tinnitus:** A ringing sound in the ears.

**TL<sub>m</sub>:** Median tolerance limit. Designates the concentration of a toxic material at which 50% of the test organisms, usually aquatic organisms, *survive*. TL<sub>90</sub>, for example, may be required by a conservation authority where pollution must be limited to protect the fish.

**TLV:** Threshold limit value. A term used by ACGIH to express the airborne concentration of a material to which *nearly* all workers can be exposed day after day without adverse effects. "Workers" means healthy individuals. The young, old, ill, or naturally susceptible will have lower tolerances and need to take additional precautions. ACGIH expresses TLVs in three ways: **TLV-TWA**, the allowable time-weighted average concentration for a normal 8-hour workday or 40-hour week; **TLV-STEL**, the short-term exposure limit or maximum concentration for a continuous exposure period of 15 minutes (with a maximum of four such periods per day, with at least 60 minutes between exposure periods, and provided that the daily **TLV-TWA** is not exceeded); ceiling (C) the concentration should not be exceeded at any time.

**TLV-Ceiling Limit:** TLV-C. The ceiling exposure limit or the concentration that should not be exceeded even instantaneously. The ACGIH publishes a book annually that explains and lists TLVs in *TLVS: Threshold Limit Values for Chemical Substances in the Work Environment Adopted by ACGIH*. Copies are available from ACGIR (q.v.).

**TLV-Skin:** See Skin.

**TOC:** Tag open-cup test method. Also Total Organic Carbon.

**Torr:** mm Hg pressure.

**Total Effective Dose Equivalent:** (TEDE) means the sum of the deep-dose equivalent (for external exposure and the committed effective dose equivalent (for internal exposures).

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**Toxic Substance:** Any chemical or material that (1) has evidence of an acute or chronic health hazard and (2) is listed in the *NIOSH Registry of Toxic Effects of Chemical Substances (RTECS)*, provided that the substance causes harm at any dose level; causes cancer or reproductive effects in animals at any dose level; has a median lethal dose (LD<sub>50</sub>) of less than 500 mg per kg of body weight when administered orally to rats; has a median LD<sub>50</sub> of less than 1000 mg per kg of body weight when administered by continuous contact to the bare skin of albino rabbits; or has a median lethal concentration (LC<sub>50</sub>) in air of less than 2000 ppm by volume of gas or vapor, or less than 20 mg per l of mist, fume, or dust when administered to albino rats.

**Toxic Substances Control Act:** See TSCA.

**Toxic:** Describes a material's ability to injure biological tissue. Having (1) an LD<sub>50</sub> Of 50 to 500 mg/kg when administered orally to albino rats weighing 200 to 300 g each; (2) an LD<sub>50</sub> of 200 to 1000 mg/kg when administered by continuous contact for 24 hours to the bare skin of albino rabbits weighing 2 to 3 kg each; or (3) an LC<sub>50</sub> Of 200 to 2000 ppm (gas or vapor) or 2 to 20 mg/l (mist, fume, or dust) when administered by continuous inhalation for 1 hour to albino rats weighing 200 to 300 g each. See Acute Toxicity.

**Toxicology:** The study of the nature, effects, and detection of poisons in living organisms. Also, substances that are otherwise harmless but prove toxic under particular conditions. The basic assumption of toxicology is that there is a relationship among the dose (amount), the concentration at the affected site, and the resulting effects.

**TPQ Threshold Planning Quantity:** Per 40 CFR 302. The amount of material at a facility that requires emergency planning and notification per CERCLA.

**Trade Name:** A name given to a product by the manufacturer or supplier. It is usually not the chemical name, and the same or similar products can be marketed under different trade names by different companies.

**Trade Secret:** Confidential information (formula, process, device, or compilation of data) that gives the owner an advantage over competitors. Manufacturers may choose to withhold data of a proprietary nature from an MSDS. Typically this would be the ingredients of a formulated product. OSHA permits this provided that (1) the trade secret claim can be substantiated, (2) the MSDS indicates that data is being withheld, and (3) the properties and health effects are included. State laws vary on this practice; some states require a trade secret registration number to be assigned to a material. There are procedures to obtain limited trade secret disclosure in emergency situations.

**Triple bottom line:** Sustainable development involving the simultaneous pursuit of economic prosperity, environmental quality, and social equity.

**TSCA:** Toxic Substances Control Act. Public Law PL 94-469. Found in 40 CFR 700-799. EPA has jurisdiction. Effective January 1, 1977. Controls the exposure to and use of raw industrial chemicals not subject to other laws. Chemicals are to be evaluated prior to use and can be controlled based on risk. The act provides for a listing of all chemicals that are to be

evaluated prior to manufacture or use in the U.S. (Call the EPA, Industry Assistance Office, [202] 554-1404.)

**TWA:** Time-weighted average. See TLV-TWA.

**TXDS:** Qualifying toxic dose.

**UEL:** See Upper Explosive Limit, Upper Flammable Limit.

**UFL:** See Upper Explosive Limit, Upper Flammable Limit.

**UN Number:** See DOT Identification Numbers; PIN.

**Unrestricted Area:** An area, access to which is neither limited nor controlled by the licensee.

**Unstable:** Tending toward decomposition or other unwanted chemical change during *normal* handling or storage. An unstable chemical in its pure state, or as commonly produced or transported, polymerizes vigorously, decomposes, condenses, or becomes self-reactive under conditions of shock, pressure, or temperature. See Stability. See Stability, Reactive.

**Upper Explosive Limit, Upper Flammable Limit:** UEL, UFL. The highest concentration of a material in air that produces an explosion in fire or ignites when it contacts an ignition source (high heat, electric arc, spark, or flame). A higher concentration of the material in a smaller percentage of concentration of air may be too rich to be ignited. See Flammable Limits.

**Urticaria:** Nettle rash; hives; elevated, itching, white patches.

**UV:** Ultraviolet (light).

**Vapor Density:** The weight of a vapor or gas compared to the weight of an equal volume of air, an expression of the density of the vapor or gas calculated as the ratio of the molecular weight of the gas to the average molecular weight of air, which is 29. The  $\text{mw of gas}/29 = \text{vapor density}$ . Materials lighter than air have vapor densities of less than 1.0. Materials heavier than air have vapor densities greater than 1.0. All vapors and gases mix with air, but the lighter materials tend to rise and dissipate (unless confined). Heavier vapors and gases are likely to concentrate in low or enclosed places (along or under floors; in sumps, sewers, manholes, trenches, and ditches) creating fire, explosion, or health hazards. A factor in still, enclosed air.

**Vapor Pressure:** The pressure exerted by a saturated vapor above its own liquid in a closed container. Vapor pressures reported on MSDSs are in millimeters of mercury (mm Hg) at 68°F (20°C), unless stated otherwise. Three facts are important to remember: (1) vapor pressure of a substance at 100°F (38°C) is always higher than the vapor pressure of the substance at 68°F (20°C). (2) Vapor pressures reported on MSDSs in mm Hg are usually very low pressures: 760 mm Hg is equivalent to 14.7 pounds per square inch. (3) The lower the boiling point of a substance, the higher its vapor pressure. Vapor pressures are useful (with evaporation rates) in learning how quickly a material becomes airborne within the workplace and thus how quickly a worker is exposed to it.

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**Vapor:** The gaseous state of a material suspended in air that would be a liquid or solid under ordinary conditions.

**Vendor:** A person or entity that sells a product or service.

**Vertigo:** A feeling of revolving in space; dizziness, giddiness.

**Very high radiation area:** An area, accessible to individuals, in which radiation levels could result in an individual receiving an absorbed dose in excess of 500 rads in 1 hour at 1 meter from a radiation source or from any surface that the radiation penetrates.

**Viscosity:** Measurement of the flow properties of a material expressed as its resistance to flow. Unit of measurement and temperature are included.

**VOC:** Volatile organic components. Used in coatings and paint because they evaporate very rapidly. Regulated by EPA per Clean Water Act.

**Volatile organic compound (VOC):** Any organic compound that evaporates readily to the atmosphere.

**Volatility:** Measure of a material's tendency to vaporize or evaporate at ambient routine conditions.

**VP:** See Vapor Pressure.

**Waste:** Any output from the product or service system which is disposed of.

**Water pollution:** The presence in water of enough harmful or objectionable material to damage the water's quality.

**Water Reactive:** Describes a material that reacts with water to release a flammable gas or to present a health hazard.

**WBC:** White blood cell effects.

**Wetland:** An area that is regularly saturated by surface water or groundwater and subsequently is characterized by a prevalence of vegetation that is adapted for life in saturated soil conditions. Examples include swamps, bogs, fens, marshes, and estuaries.

**Work-product doctrine:** Also known as work-product rule; rule providing for qualified immunity of an attorney's work product from discovery or other compelled disclosure.

**Xeriscaping:** A gardening technique using native, drought-resistant plants.

**Zinc Fume Fever, ZFF:** Caused by inhalation of zinc oxide fume and characterized by flu like symptoms: a metallic taste in the mouth, coughing, weakness, fatigue, muscular pain, and nausea, followed by fever and chills. Symptoms occur 4 to 12 hours after exposure.

**Z List:** OSHA's Toxic and Hazardous Substances Tables Z-1, Z-2, and Z-3 of air contaminants, found in 29 CFR 1910.1000. These tables record PELS, TWAS, and ceiling concentrations for the materials listed. Any material found on these tables is considered hazardous.

**APPENDIX C**  
**DICTIONARY OF ACRONYMS**

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## **APPENDIX C**

### **DICTIONARY OF ACRONYMS**

The dictionary of acronyms may help the reader understand the terminology used in environmental management. Its purpose is to acquaint the reader with basic concepts. It does not represent legal definitions of the terms.

A&C	Abatement and Control
AA	Atomic Absorption
AA	Atomic Absorption Spectroscopy
AAA	American Arbitration Association
AAAS	American Association for the Advancement of Science
AAEE	American Academy of Environmental Engineers
AAES	American Association of Engineering Societies
AAFES	Army and Air Force Exchange Service
AAL	Applied Action Level
AANWR	Alaskan Arctic National Wildlife Refuge
AAP	Affirmative Action Plan
AAP	Army Ammunition Plant
AAP	Asbestos Action Program
AARC	Alliance for Acid Rain Control
AB	Assembly Bill
ABA	American Bar Association
ABAG	Association of Bay Area Governments
ABC	Activity-based Costing
ABES	Alliance for Balanced Environmental Solutions
ABM	Activity Based Management
ABMA	American Boiler Manufacturers Association
ABS	American Bureau of Shipping

ABTRES	Abatement and Residual Forecasting Model
AC	Alternating Current
ACA	American Conservation Association
ACBM	Asbestos-Containing Building Material
ACCA	Association of Certified Chartered Accountants
ACE	Alliance for Clean Energy
ACEC	American Consulting Engineers Council
ACEEE	America Council for and Energy Efficient Economy
ACGIH	American Conference of Government Industrial Hygienists
ACL	Analytical Chemistry Laboratory
ACL	Alternate Concentration Limit
ACM	Asbestos-Containing Material
ACO	Administrative Consent Order
ACP	Air Carcinogen Policy
ACQR	Air Quality Control Region
ACS	American Chemical Society
ACWA	American Clean Water Association
ADB	Applications Data Base
ADI	Acceptable Daily Intake
ADSS	Air Data Screening System
AEA	Atomic Energy Act of 1954
AED	Air Enforcement Division
AEE	Alliance for Environmental Education
AEE	Association of Energy Engineers
AEERL	Air and Energy Research Laboratory
AEHA	U.S. Army Environmental Hygiene Agency
AERE	Association of Environmental & Research Economists
AES	Auger Electron Spectrometry
AESA	Association of Environmental Scientists and Administrators

AFA	American Forestry Association
AFB	Air Force Base
AFBA	American Farm Bureau Federation
AFRCE	Air Force Regional Civil Engineers
AFS	Air Force Station
AFS	AIRS Facility Substation
AFUG	AIRS Facility Users Group
AGA	American Gas Association
AGCA	Associated General Contractors of America
AGST	Aboveground Storage Tanks
AHERA	Asbestos Hazard Emergency Response Act
AHM	Acutely Hazardous Material
AHW	Acutely Hazardous Waste
AI	Artificial Intelligent
AIA	American Institute of Architects
AIA	Asbestos Information Association
AIC	Acceptable Intake - Chronic
AIChE	American Institute of Chemical Engineers
AICPA	American Institute of Certified Public Accountants
AICUZ	Air Installation Compatible Use Zones
AID	Agency for International Development
AIHA	American Industrial Hygiene Association
AIHC	American Industrial Health Council
AIME	American Institute of Metallurgical Mining and Petroleum Engineers
AIRS	Aerometric Information Retrieval System
AISI	American Iron and Steel Institute
AL	Acceptable Level
AL	Action Level
ALAPCO	Association of Local Air Pollution Control Officers

ALARA	As Low As Reasonably Achievable
ALC	Application Limiting Constituent
ALJ	Administrative Law Judge
ALR	Action Leakage Rate
AMA	American Medical Association
AMBIENS	Atmospheric Mass Balance of Industrially Emitted and Natural Sulfur
AMC	American Mining Congress
AMC	Army Material Command
AMIS	Air Management Information System
AMPS	Automatic Mapping and Planning System
AMS	American Meteorological Society
AMSA	Association of Metropolitan Sewage Agencies
ANEC	American Nuclear Energy Council
ANPR	Advance Notice of Proposed Rulemaking
ANSI	American National Standards Institute
ANSI	American National Standards Institute
ANWR	Arctic National Wildlife Refuge
AOML	Atlantic Oceanographic and Meteorological Laboratory
AOR	Air Oxygen Required
APA	Acid Precipitation Act
APA	Administration Procedure Act
APA	American Planning Association
APCD	Air Pollution Control Device
APCD	Air Pollution Control District
APCO	Air Pollution Control Officer
APER	Air Pollution Emissions Report
APHA	American Public Health Association
API	American Petroleum Institute
APPA	American Public Power Association

APT	Associated Pharmacists and Toxicologists
APTI	Air Pollution Training Institute
APTMD	Air, Pesticides, and Toxics Management Division
APWA	American Public Works Association
AQCCT	Air Quality Criteria and Control Techniques
AQCR	Air Quality Control Region
AQDD	Air Quality Digest
AQDHS	Air Quality Data Handling System
AQDM	Air Quality Display Model
AQMA	Air Quality Maintenance Area
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
AQSM	Air Quality Simulation Model
AQTAD	Air Quality Technical Assistance Demonstration
ARAR	Applicable or Relevant and Appropriate Requirement
ARB	Air Resources Board
ARCS	Alternative Remedial Contract Strategy
ARIP	Accidental Release Information Program
ARM	Asses Recycling Management
ARM	Air Resources Management
ARO	Alternate Regulatory Option
ARPO	Acid Rain Policy Office
ARRPA	Air Resources Regional Pollution Assessment
ARZ	Auto-Restricted Zone
AS	Area Source
ASC	Area Source Category
ASCE	American Society of Civil Engineers
ASCII	American Standard Code for Information Interchange
ASCP	American Society of Consulting Planners

ASDWA	Association of State Drinking Water Administrators
ASHAA	Asbestos in Schools Hazard Abatement Act
ASHRAE	American Society for Heating, Refrigeration and Air Conditioning Engineers
ASIWPCA	Association of State and Interstate Water Pollution Control Administrators
ASMDHS	Airshed Model Data Handling System
ASME	American Society of Mechanical Engineers
ASPA	American Society of Public Administration
ASPIS	Abandoned Site Program Information System
ASQC	American Society for Quality Control
ASRL	Atmospheric Sciences Research Laboratory
ASSE	American Society of Sanitary Engineers
AST	Aboveground Storage Tank
ASTHO	Association of State and Territorial Health Officers
ASTM	American Society for Testing and Materials
ASTSWMO	Association of State and Territorial Solid Waste Management Officials
AT	Advanced Treatment
ATA	American Trucking Association
ATMI	American Textile Manufacturers institute
ATMI	American Textile Manufacturing Institute
ATSDR	Agency for Toxic Substances and Disease Registry
ATTF	Air Toxics Task Force
AWISE	Association of Women in Science and Engineering
AWMA	Air and Waste Management Association
AWPI	American Wood Preservers Institute
AWPR	Air/Water Pollution Report
AWQC	Ambient Water-Quality Criteria
AWRA	American Water Resources Association
AWWA	American Water Works Association
AWWARF	American Water Works Association Research Foundation

AWWUC	American Water Works Utility Council
BAAQMD	Bay Area. Air Quality Management District
BAC	Biotechnology Advisory Committee
BACT	Best Available Control Technology
BADCT	Best Available Demonstrated Control Technology
BADT	Best Available Demonstrated Technology
BARF	Best Available Retrofit Facility
BART	Bay Area Rapid Transit
BART	Best Available Retrofit Technology
BAT	Best Available Technology
BAT	Best Available Treatment
BATEA	Best Available Technology Economically Achievable
BCDC	Bay Area Conservation and Development Commission
BCF	Bioconcentration Factor
BCPT	Best Conventional Pollutant Technology
BCT	Best Control Technology
BCT	Best Conventional Technology
BDAT	Best Demonstrated Achievable Technology
BDAT	Best Demonstrated Available Technology
BDT	Best Demonstrated Technology
BEJ	Best Engineering Judgment
BEJ	Best Expert Judgment
BEP	Black Employment Program
BEHP	bis(2-ethylhexyl)phthalate
BG	Billion Gallons
Bgs	Below Ground Surface
BIA	Bureau of Indian Affairs
BID	Buoyancy Induced Dispersion
BIOPLUME	Model to Predict the Maximum Extent of. Existing Plumes

BLM	Bureau of Land Management
BLOB	Biologically Liberated Organic-Beasties
BLS	Bureau of Labor Statistics
BMP	Best Management Practices
BMR	Baseline Monitoring Report
BNA	Base Neutral/Acid
BNA	Bureau of National Affairs
BOD	Biological Oxygen Demand
BOD	Biological Oxygen Demand
BOD	Biological Oxygen Demand
BOD5	Biochemical Oxygen Demand 5-day
BOF	Basic Oxygen Furnace
BOM	Bureau of Mines
BPCT	Best Practicable Control Technology
BPHE	Baseline Public Health Evaluation
BPJ	Best Professional Judgment
BPT	Best Practicable Technology
BRA	Baseline Risk Assessment
BSO	Benzene Soluble Organics
BSR	Business for Social Responsibility
BTEX	Benzene, Toluene, Ethylene, Xylene
Btu	British Thermal Unit
BTXE	Benzene, Toluene, Xylene, Ethylene
BUN	Blood Urea Nitrogen
BY	Budget Year
C	Celsius
CA	Corrective Action
CAA	Clean Air Act
CAA	Compliance Assurance Agreement

CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAD	Computer Aided Design
CADD	Computer Aided Drafting and Design
CAFO	Consent Agreement Final Order
CAG	Chair Advisory Group
CALTRANS	California Department of Transportation
CAMP	Continuous Air Monitoring Program
CAMU	Combined Area Management Units
CAMU	Corrective Action Management Unit
CAO	Corrective Action Order
CAP	Corrective Action Plan
CAP	Cost Allocation Procedure
CAP	Criteria Air Pollutant
CAPA	Critical Aquifer Protection Area
CAR	Corrective Action Report
CAR	Corrective Action Request
CARB	California Air Resources Board
CARS	Corrective Action Reporting System
CAS	Chemical Abstracts Service
CASAC	Clean Air Scientific Advisory Committee
CASETRK	FIFRA and TSCA Case Tracking System
CATS	Corrective Action Tracking System
CAU	Carbon Adsorption Unit
CB	Continuous Bubbler
CBA	Cost Benefit Analysis
CBC	Complete Blood Count
CBD	Commerce Business Daily
CC	Carbon Copy

CCA	Competition in Contracting Act
CCAA	Canadian Clean Air Act
CCAP	Center for Clean Air Policy
CCC	California Conservation Corps
CCEA	Conventional Combustion Environmental Assessment
CCHW	Citizens Clearinghouse for Hazardous Wastes
CCID	Confidential Chemicals Identification System
CCP	Composite Correction Plan
CCR	California Code of Regulations
CD	Consent Decree
CD	Committee Draft
CDC	Centers for Disease Control
CDD	Chlorinated Dibenzo-p-dioxin
CDEPP	Council of Economic Priorities Accreditation Agency
CDF	Chlorinated Dibenzofuran
CDFG	California Department of Fish and Game
CDI	Chronic Daily Intake
CDM	Climatological Dispersion Model
CDM	Comprehensive Data Management
CDP	Common Depth Point
CDS	Compliance Data System
CE	Categorical Exclusion
CEA	Cooperative Enforcement Agreement
CEA	Cost and Economic Assessment
CEA	Council of Economic Advisors
CEAM	Center for Exposure Assessment Modeling
CEARC	Canadian Environmental Assessment Research Council
CEAT	Contractor Evidence Audit Team
CEB	Chemical Element Balance

CEC	Cation Exchange Capacity
CEC	Commission of European Communities
CEE	Center for Environmental Education
CEEM	Center for Energy and Environmental Management
CEI	Compliance Evaluation Inspection
CEI	Comprehensive Emissions Inventory
CELRF	Canadian Environmental Law Research Foundation
CEM	Continuous Emission Monitoring
CEMS	Continuous Emission Monitoring System
CEO	Chief Executive Officer
CEPP	Chemical Emergency Preparedness Plan
CEPRC	Chemical Emergency Planning and Response Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	CERCLA Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CERES	Coalition for Environmentally Responsible Economics
CERI	Center for Environment Research Information
CERT	Certificate of Eligibility
CESQG	Conditionally Exempt Small Quantity Generator
CF	Conservation Foundation
CFC	Chlorofluorocarbon
CFM	Chlorofluoromethanes
CFM	Cubic Feet per Minute
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CGI	Combustible Gas Indicator

CGL	Comprehensive General Liability
CHABA	Committee on Hearing and Bio-Acoustics
CHAMP	Community Health Air Monitoring Program
CHESS	Community Health and Environmental Surveillance System
CHIP	Chemical Hazard Information Profile
CHIPS	Chemical Hazard Information Profile System
CHP	Combined Heat and Power
CHRIS	Chemical Hazard Response Information System
CHWMP	County Hazardous Waste Management Plan
CI	Compression Ignition
CIAQ	Council on Indoor Air Quality
CICA	Competition in Contracting Act
CICIS	Chemicals in Commerce Information System
CIH	Certified Industrial Hygienist
CIS	Chemical Information System
CITES	Convention of International Trade in Endangered Species
CLC	Capacity Limiting Constituents
CLEAN	Comprehensive Long Term Environmental Action Navy
CLEANS	Clinical Laboratory for Evaluation and Assessment of Noxious Substances
CLEVER	Clinical Laboratory for Evaluation and Validation of Epidemiologic Research
CLF	Conservation Law Foundation
CLIPS	Chemical List Index and Processing System
CLP	Contract Laboratory Program
CLPS	Contract Lab System
CM	Corrective Measure
cm/s	Centimeters per Second
cm <sup>3</sup>	Cubic Centimeter
CMA	California Manufacturers Association
CMA	Chemical Manufacturers Association

CMB	Chemical Mass Balance
CME	Comprehensive Monitoring Evaluation
CMEL	Comprehensive Monitoring Evaluation List
CMEL	Comprehensive Monitoring Evaluation Log
CMHP	Contaminated Materials Handling Plan
CMi	Corrective Measures Implementation
CMS	Corrective Measures Study
CNCC	California Natural Coordinating Council
CNG	Compressed Natural Gas
CNS	Central Nervous System
CO	Carbon Monoxide
CO	Change Order
CO <sub>2</sub>	Carbon Dioxide
COC	Chain of Custody
COC	Chemical of Concern
COD	Chemical Oxygen Demand
COE	U.S. Army Corps of Engineers
COG	Council of Governments
COQ	Cost of Quality
COR	Contracting Officer's Representative
CORPS	Army Corps of Engineers
CPA	Certified Public Accountant
CPAF	Cost Plus Award Fee
CPC	Chemical Protective Clothing
CPF	Carcinogenic Potency Factor
CPFF	Cost Plus Fixed Fee
CPI	Chemical Process Industries
CPI	Consumer Price Index
CPIF	Cost Plus Incentive Fee

CPO	Certified Project Officer
CPR	Cardiopulmonary Resuscitation
CPSA	Consumer Product Safety Act
CPSC	Consumer Product Safety Commission
CPT	Cone Penetrometer Test
CQA	Construction Quality Assurance
CRAVE	Carcinogen Risk Assessment Verification Exercise
CRC	Contamination Reduction Corridor Limit
CRDL	Contract-Required Detection Limit
CRL	Certified Reporting Limit
CROP	Consolidated Rules of Practice
CRP	Community Relations Plan
CRQL	Contract-Required Quantitation Limit
CRT	Cathode Ray Tube
CRZ	Contamination Reduction Zone
CSB	Chemical Safety and Hazard Investigation Board
CSD	Commission on Sustainable Development
CSG	Council of State Governments
CSG	Commin Study Act
CSHEM	Conference of State Health and Environmental Managers
CSI	Compliance Sampling Inspection
CSIN	Chemical Substances Information Network
CSO	Combined Sewer Overflow
CSPI	Center for Science in the Public Interest
CVAA	Cold Vapor Atomic Absorption
CWA	Clean Water Act
CWAP	Clean Water Action Project
CWMB	California Waste Management Board
CWPCA	California Water Pollution Control Association

CWRT	Center Waste Reduction Technologies
CWT	Centralized Waste Treatment
CWTC	Chemical Waste Transportation Council
CZMA	Coastal Zone Management Act of 1972
DAF	Department of Air Force
DAF	Dilution/Attenuation Factors
DAF	Dissolved Air Flotation
DAFT	Dissolved Air Flotation Thickening
dB	Decibel
dba	Decibels on A-weighted Scale
DBMS	Database Management System
DC	Direct Current
DCE	Dichloroethene
DCO	Delayed Compliance Order
DCS	Distributed Control System
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethylene
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DEC	Department of Environmental Conservation
DEH	Directorate of Engineering & Housing (U.S. Army)
DEIS	Draft Environmental Impact Statement
DEP	Department of Environmental Protection
DER	Department of Environmental Resources
DERA	Defense Environmental Restoration Account
DERP	Defense Environmental Restoration Program
DES	Diethylstilbestrol
DFA	Department of Food and Agriculture
DFE	Design for the Environment

DFM	Diesel Fuel Marine
DHS	Department of Health Services (California)
DHS	Designated Hazardous Substances
DI	Deionized
DI	Diagnostic Inspection
DIR	Department of Industrial Relations
DIS	Draft International Standard
DJSGI	Dow Jones Sustainability Group Indexes
DL	Detection Limit
DLA	Defense Logistics Agency
DMA	U.S. Defense Mapping Agency
DMR	Discharge Monitoring Report
DMS	Data Management System
DN	Department of Navy
DNA	Deoxyribonucleic Acid
DNB	Dinitrobenzene
DNR	Department of Natural Resources
DNSC	Defense National Stockpile Center (Former name of DLA Strategic Materials)
DNT	Dinitrotoluene
DNT	Dinitrobenzene
DO	Dissolved Oxygen
DOC	Document of Compliance
DOC	Department of Commerce
DOCKET	Consolidated Docket of Civil Enforcement Actions
DOD	Department of Defense
DOE	Department of Ecology
DOE	Department of Energy
DOI	Department of Interior
DOJ	Department of Justice

DOL	Department of Labor
DOL	Directorate of Logistics (U.S. Army)
DOS	Department of State
DOS	Disk Operating System
DOT	Department of Transportation
DPA	Deepwater Ports Act
DPM	Defense Priority Model
DQO	Data Quality Objectives
DRBC	Delaware River Basin Commission
DRE	Deconstruction/Removal Efficiency
DRMO	Defense Neutralization and Marketing Office
DSCF	Dry Standard Cubic Feet
DSCM	Dry Standard Cubic Meter
DSE	Domestic Sewage Exclusion
DTSC	Department of Toxic Substances Control (California)
DU	Ducks Unlimited
DWR	Department of Water Resources
DWS	Drinking Water Standard
EA	Endangerment Assessment
EA	Enforcement Agreement
EA	Environmental Action
EA	Environmental Assessment
EAF	Environmental Audit
EAP	Electric Arc Furnace
EAR	Environmental Action Report
EB	Environmental Action Plan
EBCDIC	Extended Binary Coded Decimal Interchange Code
EBM	Environmental Business Management
EBRD	European Bank for Reconstruction and Development

EC	Effective Concentration
EC	Environment Canada
EC	European Community
ECAO	Environmental Criteria and Assessment Office
ECD	Electron Capture Detector
ECHH	Electro-Catalytic Hyper-Heaters
ECL	Environmental Chemical Laboratory
ECL	Executive Control Language
ECLA	Economic Commission for Latin America
ECRA	Environmental Cleanup Responsibility Act
ECSL	Enforcement Compliance Schedule Letters
ED	Effective Dose
EDA	Economic Development Administration
EDA II	Emergency Declaration Area
EDB	Ethylene Dibromide
EDC	Ethylene Dichloride
EDD	Enforcement Decision Document
EDF	Environmental Defense Fund
EDRS	Enforcement Document Retrieval System
EDTA	Ethylene Diamine Triacetic Acid
EDZ	Emission Density Zoning
EEA	Energy and Environmental Analysis
EEG	Electroencephalogram
EEl	Edison Electrical Institute
EEMI	Environmental Engineers and Management Institute
EER	Excess Emission Report
EERI	Earthquake Engineering Resources Institute
EERU	Environmental Emergency Response Unit
EESI	Environment and Energy Study Institute

EESL	Environmental Ecological and Support Laboratory
EF	Emission Factor
EFO	Equivalent Field Office
EFTA	European Free Trade Association
EGR	Exhaust Gas Recirculation
EH&S	Environmental Health and Safety
EHC	Environmental Health Committee
EHIS	Emission History Information System
EHS	Extremely Hazardous Substance
EI	Emissions Inventory
EIA	Economic Impact Assessment
EIA	Environmental Impact Assessment
EIL	Environmental Impairment Liability
EIR	Endangerment Information Report
EIR	Environmental Impact Report
EIS	Environmental Impairment Statement
EIS	Environmental Impact Statement
EIS	Environmental Inventory System
EIS/AS	Emissions Inventory System/Area Source
EIS/PS	Emissions Inventory System/Point Source
EITF	Emerging Issues Task Force
EKMA	Empirical Kinetic Modeling Approach
EL	Exposure Level
ELM	Electromagnetic
ELP	Environmental Leadership Program
ELR	Environmental Law Reporter
EM	Electron Microscope
E-MAIL	Electronic Mail
EMAR	Eco-Management and Audit Regulation

EMAS	Eco-Management and Audit Scheme
EMAS	Enforcement Management and Accountability System
EMC	Environmental Management Committee
EMR	Environmental Management Report
EMS	Environmental Management System
EMSL	Environmental Monitoring Systems Laboratory
EMTS	Environmental Monitoring Testing Site
EMTS	Exposure Monitoring Test Site
EO	Ethylene Oxide
EO	Executive Officer
EO	Executive Order
EOC	Emergency Operating Center
EOD	Explosion Ordnance Disposal
EOP	Equal Opportunity Employer
EOT	Emergency Operations Team
EPA	Environmental Protection Agency
EPA	U.S Environmental Protection Agency
EPAA	Environmental Programs Assistance Act
EPAAR	EPA Acquisition Regulations
EPACASR	EPA Chemical Activities Status Report
EPCA	Energy Policy and Conservation Act
EPCRA	Emergency Protection and Community Right-to-Know Act
EPE	Environmental Performance Evaluation
EPI	Environmental Performance Indicator
EPI	Environmental Policy Institute
EPI	Environmental Priorities Initiative
EPIC	Environmental Photographic Interpretation Center
EPM	Environmental Performance Metric
EPNL	Effective Perceived Noise Level

EP	Environmental Profile
EPO	Estuarine Programs Office
EPRI	Electric Power Research Institute
EPTC	Extraction Procedure Toxicity Characteristic
EP TOX	Extraction Procedure Toxicity Test
ER	Electrical Resistivity
ERA	Economic Regulatory Agency
ERAMS	Environmental Radiation Ambient Monitoring System
ERC	Emergency Response Commission
ERC	Emissions Reduction Credit
ERC	Environment Reporter Cases
ERC	Environmental Research Center
ERCS	Emergency Response Cleanup Services
ERDA	Energy Research and Development Administration
ERD&DAA	Environmental Research, Development, and Demonstration Authorization Act
ERL	Environmental Research Laboratory
ERNS	Emergency Response Notification Systems
ERP	Enforcement Response Policy
ES	Enforcement Strategy
ESA	Endangered Species Act
ESA	Environmental Site Assessment
ESA	Environmentally Sensitive Area
ESAP	Environmental Sampling and Analysis Plan
ESC	Endangered Species Committee
ESCA	Electron Spectroscopy for Chemical Analysis
ESECA	Energy Supply and Environmental Coordination Act
ESH	Environmental Safety and Health
ESLI	End-of-Service-Life Indicator
ESP	Electrostatic Precipitators

ET	Emissions Trading
ETP	Emissions Trading Policy
EUP	Environmental Use Permit
EWS	Engineering Work Station
ExEx	Expected Exceedance
F	Fahrenheit
FAA	Federal Aviation Administration
FACA	Federal Advisory Committee Act
FACM	Friable Asbestos-Containing Material
FAM	Friable Asbestos Material
FAO	Food and Agriculture Organization
FAR	Federal Acquisition Regulations
FAR	Facility Action Report
FAS	Financial Accounting Standard
FASB	Financial Accounting Standards Board
FATES	FIFRA and TSCA Enforcement System
FBC	Fluidized Bed Combustion
FCC	Federal Communications Commission
FCC	Fluid Catalytic Converter
f/cc	Fibers per Cubic Centimeter
FCCC	Framework Convention on Climate Change
FCCU	Fluid Catalytic Cracking Unit
FCO	Federal Coordinating Officer
FDA	Food and Drug Administration
FDIS	Final Draft International Standard
FDO	Fee Determination Official
FE	Fugitive Emissions
FEA	Federal Energy Administration
FEDS	Federal Energy Data System

FEF	Forced Expiratory Flow
FEIS	Final Environmental Impact Statement
FEIS	Fugitive Emissions Information System
FEL	Frank Effect Level
FEMA	Federal Emergency Management Agency
FEPCA	Federal Environmental Pesticides Control Act
FERC	Federal Energy Regulatory Commission
FFA	Flammable Fabrics Act
FFAR	Fuel and Fuel Additive Registration
FFC	Federal Facility Coordinator
FFDCA	Federal Food, Drug, and Cosmetic Act
FFFSG	Fossil Fuel Fired Steam Generator
FFIS	Federal Facilities Information System
FGD	Flue Gas Desulfurization
FHA	Farmers Home Administration
FHA	Federal Housing Authority
FHSA	Federal Hazardous Substances Act
FHWA	Federal Highway Administration
FIA	Federal Insurance Administration
FIC	Federal Information Center
FID	Flame Ionization Detector
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FIM	Friable Insulation Material
FINDS	Facilities Index System
FIP	Federal Implementation Plan
FIP	Federal Information Plan
FIP	Final Implementation Plan
FIT	Field Investigation Team
FLAA	Flame Atomic Absorption

FLM	Federal Land Manager
FLP	Flash Point
FLPMA	Federal Land Policy and Management Act
FM	Friable Material
F/M	Food to Microorganism Ratio
FMC	Federal Maritime Commission
FMFIA	Federal Managers Financial Integrity Act
FML	Flexible Membrane Liner
FMO	Financial Management Officer
FMP	Facility Management Plan
FOE	Friends of the Earth
FOI	Freedom of Information
FOIA	Freedom of Information Act
FOISD	Fiber Optic Isolated Spherical Dipole Antenna
FONSI	Finding of No Significant Impact
FORAST	Forest Response to Anthropogenic Stress
FORTRAN	Formula Translation
FP	Fine Particulate
FPA	Federal Pesticide Act
FPC	Federal Power Commission
FPD	Flame Photometric Detector
FPEIS	Fine Particulate Emissions Information System
FPLH	Free-Phase Liquid Hydrocarbon
FPR	Federal Procurement Regulation
FR	Federal Register
FR	Final Rulemaking
FRA	Federal Register Act
FRB	Federal Reserve Board
FRC	Federal Records Center

FRC	Functional Residual Capacity
FRDS	Federal Reporting Data System
FREDS	Flexible Regional Emissions Data System
FRES	Forest Range Environmental Study
FRM	Federal Reference Methods
FRN	Final Rulemaking Notice
FRS	Formal Reporting System
FS	Feasibility Study
FS	Forest Service
FSAA	Food Security Act
FSP	Field Sampling Plan
FTC	Federal Trade Commission
FTP	Federal Test Procedure
FTS	Federal Telecommunications System
FUA	Fuel Use Act
FURS	Federal Underground Injection Control Reporting System
FUSRAP	Formerly Used Sites Remedial Action Plan
FVC	Forced Vital Capacity
FWPCA	Federal Water Pollution Control Act
FWCA	Fish and Wildlife Coordination Act
FVMP	Federal Visibility Monitoring Program
FWPCA	Federal Water Pollution Control Act
FWPCA	Federal Water Pollution Control Administration
FWS	U.S. Fish and Wildlife Service
G&A	General and Administrative
g/mi	Grams per Mile
GAAP	Generally Accepted Accounting Principles
GAC	Granular Activated Carbon
GACT	Generally Available Control Technology

GACT	Granular Activated Carbon Treatment
GAO	General Accounting Office
GATT	General Agreement on tariffs and Trade
GC	Gas Chromatograph(y)
GC	General Counsel
GC/CON	Gas Chromatography/Conductivity Detector
GC/ECD	Gas Chromatography/Electron Capture Detector
GC/FID	Gas Chromatograph/Flame Ionization Detector
GC/MS	Gas Chromatograph/Mass Spectrograph
GC/PID	Gas Chromatograph/Photoionization Detector
GDP	Gross Domestic Product
GEI	Geographic Enforcement Initiative
GEMI	Global Environmental Management Initiative
GEMI	Global Environmental Management Initiative
GEMS	Global Environmental Monitoring System
GEMS	Graphical Exposure Modeling System
GEP	Good Engineering Practice
GF	Graphite Furnace
GFAA	Graphite Furnace Atomic Absorption
GFD	Geotechnical Field Drilling
GFF	Glass Fiber Filter
GI	Gastrointestinal
GIS	Geographic Information Systems
GIS	Global Indexing System
GLC	Gas Liquid Chromatography
GLC	Ground Level Concentration
GMCC	Global Monitoring for Climatic Change
g-mole	Gram-Mole
GMT	Greenwich Mean Time

GNP	Gross National Product
GPAD	Gallons per Acre per Day
gpd	Gallons per Day
GPG	Grams per Gallon
GPM	Gallons Per Minute
GPO	Government Printing Office
GPR	Ground-Penetrating Radar
GPS	Groundwater Protection Strategy
GRGL	Groundwater Residue Guidance Level
GRI	Global Reporting Initiative
GS	General Schedule
GS	Geological Survey
GSA	General Services Administration
GVP	Gasoline Vapor Pressure
GVW	Gross Vehicle Weight
GWC	Geotechnical Well Construction
GWM	Groundwater Monitoring
GWP	Global Warming Potential
GWPS	Groundwater Protection Standard
GWPS	Groundwater Protection Strategy
GWTF	Groundwater Task Force
HA	Hazard Assessment
HAD	Health Assessment Document
HAP	Hazardous Air Pollutant
HAPEMS	Hazardous Air Pollutant Enforcement Management System
HAPPS	Hazardous Air Pollutant Prioritization System
HAR	Hydrogeological Assessment Report
HATREMS	Hazardous and Trace Emissions System
HAZMAT	Hazardous Material

HAZOP	Hazard and Operability Study
HAZWOPER	Hazardous Waste Remediations Disposal Operator
HBEP	Hispanic and Black Employment Programs
HBL	Health Based Level
HC	Hazardous Constituents
HCFC	Hydrochlorofluorocarbons
HCP	Hypothermal Coal Process
HCS	Hazard Communication Standard
HDPE	High Density Polyethylene
HDV	Heavy Duty Vehicle
HEPA	High-Efficiency Particulate Air
HERS	Hyperion Energy Recovery System
HEW	Department of Health, Education and Welfare
HEX-BCH	Hexachloronorbomadiene
HFM	Human Exposure Modeling
HHC	Highly Hazardous Chemical
HHS	Department of Health and Human Services
HHV	Higher Heating Value
HHW	Household Hazardous Waste
HI	Hazard Index
HIBPHC	High Boiling Point Hydrocarbon
HLRW	High-Level Radioactive Waste
HMCRI	Hazardous Materials Control Research Institute
HMIG	Hazardous Materials Identification Guide
HMIS	Hazardous Materials Information System
HMR	Hazardous Materials Regulations
HMSO	Hazardous Materials Storage Ordinance
HMTA	Hazardous Materials Transportation Act
HMTR	Hazardous Materials Transportation Regulations

HOC	Halogenated Organic Compounds
HOC	Hazardous Organic Constituents
HON	Hazardous Organic NESHAP
HOV	High Occupancy Vehicle
HP	Horse Power
HPLC	High Performance Liquid Chromatography
HPLC	High Pressure Liquid Chromatography
HPV	High Priority Violator
HRS	Hazard Ranking System
HSDB	Hazardous Substance Data Base
HSL	Hazardous Substance List
HSP	Health and Safety Plan
HSWA	Hazardous and Solid Waste Amendments
HT	Hypothermally Treated
HTP	High Temperature and Pressure
HUD	Housing and Urban Development
HVAC	Heating, Ventilation, and Air Conditioning
HVIO	High Volume Industrial Organics
HWAC	Hazardous Waste Action Coalition
HWCL	Hazardous Waste Control Law
HWDMMS	Hazardous Waste Data Management System
HWGTF	Hazardous Waste Ground Water Task Force
HWGTF	Hazardous Waste Ground Water Test Facility
HWIS	Hazardous Waste Information System
HWLT	Hazardous Waste Land Treatment
HWM	Hazardous Waste Management
HWREL	Hazardous Waste Engineering Research Laboratory
HWRTF	Hazardous Waste Restrictions Task Force
HWTC	Hazardous Waste Treatment Council

IA	Interagency Agreement
I&M	Inspection & Maintenance
IAEA	International Atomic Energy Agency
IAG	Interagency Agreement
IAO	Indoor Air Quality
IAP	Indoor Air Pollution
IARDB	Interim Air Toxics Data Base
IBA	Industrial Biotechnology Association
IC	Ion Chromatography
ICAP	Inductively Coupled Argon Plasma
ICBN	International Commission on the Biological Effects of Noise
ICC	Interstate Commerce Commission
ICC	International Chamber of Commerce
ICP	Inductively Coupled Plasma
ICP-AES	Inductively Coupled Plasma-Atomic Emission Spectrophotometry
ICRE	Ignitability, Corrosivity, Reactivity, Extraction
ICS	Intermittent Control System
ICS	International Command Systems
ICWM	Institute for Chemical Waste Management
ID	Inside Diameter
IDL	Instrument Detection Limit
IE B	International Environment Bureau
IEA	Internal/External Audit
IEC	International Electrotechnical Commission
IFB	Invitation for Bid
IFCAM	Industrial Fuel Choice Analysis Model
IFIS	Industry File Information System
IFMP	Integrated Environmental Management Project
IFPP	Industrial Fugitive Process Particulate

IG	Inspector General
ILH	Immediately Dangerous to Life or Health
IMO	International Maritime Organization
IMPACT	Integrated Model of Plumes and Atmosphere in Complex Terrain
IMPROVE	Interagency Monitoring of Protected Visual Environment
INEM	International Network for Environmental Management
IOU	Input/Output Unit
IP	Induced Polarization
IP	Inhalable Particles
IPCS	International Program on Chemical Safety
IPM	Inhalable Particulate Matter
IPM	Integrated Pest Management
IPP	Implementation Planning Program
IPP	Integrated Plotting Package
IPP	Intermediate Priority Pollutant
IR	Infrared
IR	Installation Restoration
IRA	Interim Response Action
IRG	Interagency Review Group
IRIS	Instructional Resources Information System
IRIS	Integrated Risk Information System
IRM	Interim Remedial Measures
IRMC	Inter-Regulatory Risk Management Council
IRP	Installation Restoration Process
IRP	Installation Restoration Program
IRPTC	International Register of Potentially Toxic Chemicals
IRR	Institute of Resource Recovery
IRS	Internal Revenue Service
IS	International Standard

IS	Interim Status
ISA	International Federation of the National Standardizing Associations
ISCL	Interim Status Compliance Letter
ISCLT	Industrial Source Complex, Long-Term
ISD	Interim Status Document
ISE	Ion-Specific Electrode
ISM	International Safety Management
ISMAP	Indirect Source Model for Air Pollution
ISO	International Organization for Standardization
ISC	Industrial Source Complex
ISV	In Situ Vitrification
ISWMP	Integrated Solid Waste Management Plan
ITC	Interagency Testing Committee
ITC	International Trade Commission
ITOL	Industry Taskforce on Offshore Lightering
ITP	Individual Training Plan
ITR	Innovative Technology Requirement
IWC	In-Stream Waste Concentration
IWS	Ionizing Wet Scrubber
JAPCA	Journal of Air Pollution Control Association
JCG	Joint Coordination Group
JEC	Joint Economic Committee
JPA	Joint Permitting Agreement
JTG	Joint Technical Group
JWG	Joint Working Group
kW	Kilowatt
kWH	Kilowatt Hour
L	Liter
LAER	Lowest Achievable Emission Rate

LAI	Laboratory Audit Inspection
LAP	Laboratory Analytical Protocol
lb	Pound
LC	Lethal Concentration
LC	Liquid Chromatography
LCA	Life-Cycle Assessment
LCD	Local Climatological Data
LCL	Lower Control Limit
LCM	Life Cycle Management
LCRS	Leachate Collection and Removal System
LD	Land Disposal
LD	Lethal Dose
LDCRS	Leachate Detection, Collection, and Removal System
LDD	Light Duty Diesel
LDIP	Laboratory Data Integrity Program
LDPE	Low Density Polyethylene
LDR	Land Disposal Restrictions
LDS	Leak Detection System
LDT	Light Duty Truck
LDV	Light Duty Vehicle
LEA	Local Enforcement Agency
LEL	Lower Explosive Limit
LEP	Laboratory Evaluation Program
LEPC	Local Emergency Planning Committee
LFL	Lower Flammability Limit
LHW	Liquid Hazardous Waste
L&I	License and Inspection
LIDAR	Light Detection and Ranging
LIMB	Limestone-Injection, Multi-Stage Burner

LLRW	Low Level Radioactive Waste
LLRWPA	Low-Level Radioactive Waste Policy Act
LMFBR	Liquid Metal Fast Breeder Reactor
LNEP	Low Noise Emission Product
LNG	Liquefied Natural Gas
LOAFL	Lowest Observed Adverse Effect Level
LOE	Level of Effort
LOIS	Loss of Interim Status
LP	Legislative Proposal
LPG	Liquefied Petroleum Gas
LRMS	Low Resolution Mass Spectroscopy
LSI	Legal Support Inspection
LST	Low-Solvent Technology
LTD	Land Treatment Demonstration
LTU	Land Treatment Unit
LUFT	Leaking Underground Fuel Tank
LUST	Leaking Underground Storage Tank
LWCF	Land and Water Conservation Fund
µg/kg	Micrograms per Kilogram
µg/l	Micrograms per Liter
m <sup>3</sup>	Cubic Meter
MAB	Man and Biosphere Program
MACT	Maximum Achievable Control Technology
MADCAP	Model of Advection, Diffusion, and Chemistry for Air Pollution
MAER	Maximum Allowable Emission Rate
MAJCOM	Major Commands
MAR	Machine Action Report
MARC	Mining and Reclamation Council
MATC	Maximum Allowable Toxicant Concentration

MBAS	Methylene Blue Active Substances
MBDA	Minority Business Development Agency
MBE	Minority Business Enterprises
MBER	Minority Business Enterprise Representative
MBF	Matrix Biological Film
MCA	Manufacturing Chemists Association
MCC-IP	Materials Characterization Center Static Leach Test
MCEF	Mixed Cellulose Ester Filter
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MCP	Municipal Compliance Plan
MDA	Methylenedianiline
MDEQ	Massachusetts Department of Environmental Quality
MDL	Method Detection Limit
MEFR	Maximum Expiratory Flow Rate
MEI	Maximum Exposed Individual
MEK	Methyl Ethyl Ketone
MEM	Modal Emission Model
MEP	Maximum Extent Practicable
MEP	Multiple Extraction Procedure
MERL	Municipal Environmental Research Laboratory
MESS	Model Evaluation Support System
MFBI	Major Fuel Burning Installation
MFC	Metal Finishing Category
Mg	Milligram
mg/kg	Milligrams per Kilogram
mg/l	Milligrams per Liter
MGD	Million Gallons Per Day
MH	Man-Hours

MIBK	Methyl Isobutyl Ketone
MIC	Methyl Isocyanate
MICE	Management Information Capability for Enforcement
MICROMORT	A one-in-a-Million Chance of Death from an Environmental Hazard
MIPR	Military Interagency Procurement Request
MIPS	Millions of Instructions Per Second
MIS	Management Information System
ML	Meteorology Laboratory
ML	Milliliter
MLSS	Mixed Liquor Suspended Solids
MLVSS	Mixed Liquor Volatile Suspended Solids
MMS	Minerals Management Service
MMT	Million Metric Tons
MOA	Memorandum of Agreement
MOBILE	Mobile Source Emission Model
MOS	Margin of Safety
MOU	Memorandum of Understanding
MPN	Most Probable Number
MPP	Merit Promotion Plan
MPRSA	Marine Protection, Research and Sanctuaries Act
MPTDS	MPTER Model with Deposition and Settling of Pollutants
MPTER	Multiple Point Source Model with Terrain
MRA	Minimum Retirement Age
MREM	Milliroentgen Equivalent in Man
MS	Mass Spectrometry
MS	Matrix Spike
MSAM	Multi-keyed Indexed Sequential File Access Method
MSD	Matrix Spike Duplicate
MSDS	Material Safety Data Sheet

MSHA	Mine Safety and Health Administration
MSL	Mean Sea Level
MSW	Municipal Solid Waste
MSWLF	Municipal Solid Waste Landfill Facility
MTB	Materials Transportation Bureau
MTBE	Methyl Tertiary Butyl Ether
MTD	Maximum Tolerated Dose
MTDDIS	Mesoscale Transport Diffusion and Deposition Model for Industrial Sources
MTG	Media Task Group
MTR	Minimum Technology Requirement
MTS	Management Tracking System
MTSL	Monitoring and Technical Support Laboratory
MVA	Multivariate Analysis
MVAPCA	Motor Vehicle Air Pollution Control Act
MVEL	Motor Vehicle Emissions Laboratory
MVI/M	Motor Vehicle Inspection/Maintenance
MVL	Maximum Use Limits
MVRS	Marine Vapor Recovery System
MVV	Maximal Voluntary Ventilation
MW	Megawatt
MW	Molecular Weight
MW	Monitoring Well
MWC	Municipal Waste Combustor
MWL	Municipal Waste Leachate
MWTA	Medical Waste Treatment Act
NA	Not Analyzed
NAA	Nonattainment Areas
NAAQS	National Ambient Air Quality Standards
NAAS	National Air Audit System

NAC	National Asbestos Council
NACA	National Agricultural Chemicals Association
NADB	National Atmospheric Data Bank
NADP	National Atmospheric Deposition Program
NAE	National Academy of Engineering
NAEP	National Association of Environmental Professionals
NAIS	Neutral Administrative Inspection System
NALD	Nonattainment Areas Lacking Demonstrations
NAM	National Association of Manufacturers
NAMA	National Air Monitoring Audits
NAMF	National Association of Metal Finishers
NAMS	National Air Monitoring System
NANCO	National Association of Noise Control Officials
NAP	Naphthalene
NAPAP	National Acid Precipitation Assessment Program
NAPBTAC	National Air Pollution Control Technical Advisory Committee
NAR	National Asbestos Registry
NARA	National Air Resources Act
NARA	National Archives and Records Administration
NARS	National Asbestos-Contractor Registry System
NAS	National Academy of Sciences
NASA	National Aeronautics and Space Administration
NATICH	National Air Toxics Information Clearinghouse
NAWC	National Association of Water Companies
NAWDEX	National Water Data Exchange
NBAR	Nonbinding Preliminary Allocation of Responsibility
NBS	National Bureau of Standards
NCA	National Coal Association
NCA	Noise Control Act

NCAC	National Clean Air Coalition
NCAF	National Clean Air Fund
NCAMP	National Coalition Against the Misuse of Pesticides
NCAO	National Commission on Air Quality
NCAR	National Center for Atmospheric Research
NCBC	Naval Coalition Battalion Center
NCHS	National Center for Health Statistics
NCI	National Cancer Institute
NCM	National Coal Model
NCM	Notice of Commencement of Manufacture
NCO	Negotiated Consent Order
NCP	National Contingency Plan
NCP	Noncompliance Penalties
NCP	Nonconformance Penalty
NCR	Nonconformance Report
NCRIC	National Chemical Response and Information Center
NCS	National Compliance Strategy
NCWQ	National Commission on Water Quality
ND	Non-detect
ND	Not Detected
NDD	Negotiation Decision Document
NDDB	Natural Diversity Database
NDIR	Nondispersive Infrared Analysis
NDS	National Dioxin Study
NDS	National Disposal Site
NDWAC	National Drinking Water Advisory Council
NEA	National Energy Act
NEC	National Electric Code
NEDA	National Environmental Development Association

NEDS	National Emissions Data System
NEMA	National Electrical Manufacturers Association
NEP	National Estuary Program
NEPA	National Environmental Policy Act
NEPA	National Environmental Policy Act
NER	National Emissions Report
NEROS	Northeast Regional Oxidant Study
NESCAUM	Northeast States for Coordinated Air Use Management
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NETC	National Emergency Training Center
NETTING	Emission Trading Used to Avoid PSD/NSR Permit Review Requirements
NFA	No Further Action
NFAN	National Filter Analysis Network
NFMA	National Forest Management Act
NFPA	National Fire Protection Association
NFS	National Forest Service
NGA	National Governors Association
NGO	Non-governmental Organization
NGPA	Natural Gas Policy Act
NGWIC	National Ground Water Information Center
NHANES	National Health and Nutrition Examination Study
NHWP	Northeast Hazardous Waste Project
NICS	National Institute for Chemical Studies
NIEHS	National Institute of Environmental Health Sciences
NIEI	National Indoor Environmental Institute
NIH	National Institutes of Health
NIM	National Impact Model
NIMBY	Not In My Backyard
NIOSH	National Institute of Occupational Safety and Health

NIPDWR	National Interim Primary Drinking Water Regulations
NIS	Noise Information System
NITEP	National Incinerator Testing and Evaluation Program
NJDEP	New Jersey Department of Environmental Protection
NLAP	National Laboratory Audit Program
NMFS	National Marine Fisheries Service
NMHC	Nonmethane Hydrocarbons
NMOC	Nonmethane Organic Compound
NMP	National Municipal Policy
NMR	Nuclear Magnetic Resonance
NNC	Notice of Noncompliance
NNPSPP	National Non-Point Source Pollution Program
NO	Nitric Oxide
NOAA	National Oceanic and Atmospheric Administration
NOAEL	No Observed Adverse Effect Level
NOC	Notice of Commencement
NOD	Notice of Deficiency
NOEL	No Observed Effects Level
NOHSCP	National Oil and Hazardous Substances Contingency Plan
NOI	Notice of Intent
NON	Notice of Noncompliance
NOO	No Odor Observed
NOPEs	Non-Occupational Pesticide Exposure Study
NORA	National Oil Recyclers Association
NOS	National Ocean Survey
NOV	Notice of Violation
NOV/C/D	Notice of Violation/Compliance/Demand
NO <sub>2</sub>	Nitrogen Dioxide
Nox	Nitrogen Oxide

NPAA	Noise Pollution and Abatement Act
NPC	National Productivity Council
NPDES	National Pollution Discharge Elimination System
NPDWS	National Primary Drinking Water Standards
NPIRES	National Pesticide Information Retrieval System
NPL	National Priorities List
NPM	National Program Manager
NPN	National Particulate Network
NPR	Notice of Proposed Rulemaking
NPS	National Park Service
NPS	National Permit Strategy
NPS	National Pesticide Survey
NPS	Non-Point Source
NRC	National Research Council
NRC	National Response Center
NRC	Nuclear Regulatory Commission
NRCA	National Resource Council of America
NRDC	Natural Resources Defense Council
NRT	National Response Team
NRWA	National Rural Water Association
NSDWR	National Secondary Drinking Water Regulations
NSF	National Sanitation Foundation
NSF	National Science Foundation
NSO	Nonferrous Smelter Orders
NSPE	National Society for Professional Engineers
NSPS	New Source Performance Standards
NSR	New Source Review
NSWMA	National Solid Waste Management Association
NSWS	National Surface Water Survey

NTA	Negotiated Testing Agreement
NTGS	National Technical Guidance Studies
NTIS	National Technical Information Service
NTP	National Toxicology Program
NTSB	National Transportation Safety Board
NWA	National Water Alliance
NWF	National Wildlife Federation
NWF	National Wildlife Federation
NWIP	New Work Item Proposal
NWPA	Nuclear Waste Policy Act
NWS	National Weather Service
O&G	Oil and Gas
O&M	Operations and Maintenance
O <sub>2</sub>	Oxygen
O <sub>3</sub>	Ozone
OCD	Offshore and Coastal Dispersion Model
OCI	Organizational Conflicts of Interest
OCPSF	Organic Chemicals, Plastics, Synthetics, Fibers
OCR	Optical Character Reader
OCS	Outer Continental Shelf
OCSLA	Outer Continental Shelf Lands Act
OD	Organizational Development
OD	Outside Diameter
ODI	Open Dump Inventory
ODP	Ozone Depletion Potential
OECD	Organization for Economic Cooperation and Development
OEM	Original Equipment Manufacturer
OERR	Office of Emergency and Remedial Response
OES	Office of Emergency Services

OF	Optional Form
OFM	Organic Feed Material
OHS	Occupation Health and Safety
OMB	Office of Management and Budget
OPA	Oil Pollution Act
OPP	Office of Pesticide Programs
ORM	Other Regulated Material Act
ORNL	Oak Ridge National Laboratory
ORP	Oxidation-Reduction Potential
OSC	On-Scene Coordinator
OSDH	Oklahoma State Department of Health
OSHA	Occupational Safety and Health Act
OSHA	Occupational Safety and Health Administration
OSM	Office of Surface Mining
OSTP	Office of Science and Technology Policy
OSVS	Operating System/Virtual Storage
OSW	Office of Solid Waste
OSWER	Office of Solid Waste and Emergency Response
OTA	Office of Technology Assessment
OU	Operable Unit
OVA	Organic Vapor Analyzer
OVM	Organic Vapor Monitor
Ox	Total Oxidants
PER	Preparatory Environmental Review
PERI	Public Environmental Reporting Initiatives
PHC	Potentially Hidden Cost
PA	Policy Analyst
PA	Preliminary Assessment
PAC	Public Advisory Committee

PAH	Polycyclic Aromatic Hydrocarbon
PAI	Performance Audit Inspection
PAIR	Preliminary Assessment Information Rule
PAL	Point, Area, and Line Source Air Quality Model
PALDS	PAL Model with Deposition and Settling of Pollutants
PN	Peroxyacetyl Nitrate
PAPR	Powered Air-Purifying Respirator
PARCC	Precision, Accuracy, Representativeness, Completeness, and Comparability
PARS	Precision and Accuracy Reporting System
PA/SI	Preliminary Assessment/Site Inspection
PASS	Procurement Automated Source System
PAT	Permit Assistance Team
PBB	Polybromated Biphenyl
PCB	Polychlorinated Biphenyl
PC&B	Personnel Compensation and Benefits
PCDD	Polychlorinated-Dibenzodioxin
PDF	Polychlorinated Dibenzofuran
PCE	Pollution Control Equipment
PCE	Tetrachloroethene
PCi/I	Picocuries per Litre
PCM	Phase-Contrast Microscopy
PCP	Pentachlorophenol
PCS	Permit Compliance System
PCV	Positive Crankcase Ventilation
PDFID	Preconstruction Direct Flame Ionization Detection
PDMS	Pesticide Document Management System
PDR	Particulate Data Reduction
PDS	Personnel Decontamination Station
PE	Performance Evaluation

PEA	Preliminary Endangerment Assessment
PEA	Preliminary Exposure Analysis
PEL	Permissible Exposure Limit
PEL	Personal Exposure Limit
PEM	Partial Equilibrium Multimarket Model
PEM	Personal Exposure Model
PEMA	Professional Environmental Marketing Association
PEPE	Prolonged Elevated Pollution Episode
PESTAN	Pesticides Analytical Transport Solution
PF	Potency Factor
PF	Protection Factor
PHC	Principal Hazardous Constituent
PHE	Public Health Evaluation
PHSA	Public Health Service Act
PIC	Products of Incomplete Combustion
PID	Photoionization Detector
PIGS	Pesticides in Groundwater Strategy
PIN	Procurement Information Notice
PIP	Public Involvement Program
PIRG	Public Interest Research Group
PIRT	Pretreatment Implementation Review Task Force
PL	Public Law
PLIRRA	Pollution Liability Insurance and Risk Retention Act
PLM	Polarized Light Microscopy
PM	Particulate Matter
PMN	Premanufacture Notification
PMNF	Premanufacture Notification Form
PMR	Pollutant Mass Rate
PNA	Polynuclear Aromatic Hydrocarbons

POC	Point of Compliance
POC	Program Office Contacts
POE	Point of Exposure
POHC	Principal Organic Hazardous Constituent
POI	Point of Interception
POL	Petroleum, Oils, and Lubricants
POLREP	Pollution Report
POM	Particulate Organic Matter
POM	Polycyclic Organic Matter
POTW	Publicly Owned Treatment Works
PP	Priority Pollutants
PPA	Pesticide Producers Association
Ppb	Parts per Billion
PPC	Personal Protective Clothing
PPE	Personal Protective Equipment
PPIS	Pesticide Product Information System
Ppm	Parts per Million
PPPA	Poison Prevention Packaging Act
Ppq	Parts per Quadrillion
Ppt	Parts per Trillion
Ppth	Parts per Thousand
PQL	Practical Quantitation Limit
PR	Preliminary Review
PR	Procurement Request
PRA	Paperwork Reduction Act
PRA	Planned Regulatory Action
PRM	Prevention Reference Manuals
PRP	Potentially Responsible Party
PS	Point Source

PSA	Pipeline Safety Act
PSA	Preliminary Site Assessment
PSAM	Point Source Ambient Monitoring
PSD	Prevention of Significant Deterioration
PSES	Pretreatment Standards for Existing Sources
PSI	Pollutant Standards Index
psi	Pounds per Square Inch
psi	Pressure per Square Inch
psig	Pressure per Square Inch Gauge
PSM	Point Source Monitoring
PSNS	Pretreatment Standards for New Sources
PTFE	Polytetrafluoroethylene
PTI	Permit to Install
PTPLU	Point Source Gaussian Diffusion Model
PUC	Public Utility Commission
PV	Project Verification
PVA	Polyvinyl Alcohol
PVC	Polyvinyl Chloride
PWS	Public Water Supply
PWS	Public Water System
PWSA	Ports and Waterways Safety Act
PWSS	Public Water Supply System
QA	Quality Assurance
QAO	Quality Assurance Officer
OAPP	Quality Assurance Project Plan
OA/QC	Quality Assurance/Quality Control
qbtu	Quadrillion British Thermal Units
QC	Quality Control
QCA	Quiet Communities Act

QCI	Quality Control Index
QCP	Quiet Community Program
QL	Quantitation Limit
QNCR	Quarterly Noncompliance Report
R&D	Research and Development
RA	Reasonable Alternative
RA	Regional Administrator
RA	Regulatory Alternatives
RA	Regulatory Analysis
RA	Remedial Action
RA	Risk Analysis
RA	Risk Assessment
RAATS	RCRA Administrative Action Tracking System
RAB	Registrar Accreditation Board
RAC	Radiation Advisory Committee
RACM	Reasonably Available Control Measures
RACT	Reasonably Available Control Technology
RAD	Radiation
RAD	Radiation Adsorbed Dose
RAM	Real-Time Air-Quality Simulation Model
RAMS	Regional Air Monitoring System
RAP	Radon Action Plan
RAP	Remedial Action Plan
RAP	Response Action Plan
RAPS	Regional Air Pollution Study
RAS	Routine Analytical Services
RAT	Relative Accuracy Test
RBC	Red Blood Count

RC	Responsible Care
RCRA	Resource Conservation and Recovery Act
RCRIS	Resource Conservation and Recovery Information System Remedial Design
RD	Reference Dose
RD&D	Research, Development and Demonstration
RD/RA	Remedial Design/Remedial Action
RDF	Refuse-Derived Fuel
RDNA	Recombinant DNA
RDT&E	Research, Development, Testing, & Evaluation
RDU	Regional Decision Units
RDV	Reference Dose Values
RDX	Cyclotrimethylenetrinitramine
RDX	Trinitrotrimethylenetriamine
RE	Reasonable Efforts
RE	Reportable Event
REAP	Regional Enforcement Activities Plan
REEP	Review of Environmental Effects of Pollutants
REL	Recommended Exposure Limit
REM	Roentgen Equivalent Man
REM/FIT	Remedial/Field Investigation Team
REMS	RCRA Enforcement Management System
REP	Reasonable Efforts Program
REPS	Regional Emissions Projection System
RF	Response Factor
RFA	Regulatory Flexibility Act
RFA	RCRA Facility Assessment
RFB	Request for Bid
RfDdt	Developmental Reference Dose
RfDs	Subchronic Reference Dose

RFI	Remedial Facility Investigation
RFP	Reasonable Further Progress
RFP	Request for Proposal
RHW	Restricted Hazardous Waste
RI	Reconnaissance Inspection
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RIA	Regulatory Impact Analysis
RIA	Regulatory Impact Assessment
RIC	Radon Information Center
RIM	Regulatory Interpretation Memorandum
RIN	Regulatory Identifier Number
RIP	RCRA Implementation Plan
RISC	Regulatory Information Service Center
RMCL	Recommended Maximum Contaminant Levels
RME	Reasonable Maximum Exposure
RMP	Risk Management Plan
RMPP	Risk Management Prevention Plans
RMPP	Risk Management and Prevention Program
RNA	Ribonucleic Acid
RO	Regional Office
ROC	Record of Communication
ROD	Record of Decision
ROG	Reactive Organic Gases
ROM	Regional Oxidant Model
ROM	Rough Order Magnitude
ROP	Regional Oversight Policy
ROPA	Record of Procurement Action
RP	Respirable Particulates

RP	Responsible Party
RPAR	Rebuttable Presumption Against Registration
RPD	Relative Percent Difference
RPM	Remedial Project Manager
RPM	Revolutions per Minute
RPTA	Responsible Property Transfer Act
RQ	Reportable Quantities
RR	Respiration Rate
RRC	Regional Response Center
RREL	Risk Reduction Engineering Laboratory
RRP	Regional Response Plan
RRT	Regional Response Team
RRT	Requisite Remedial Technology
RSD	Risk Specific Dose
RSPA	Research and Special Programs Administration
RT	Regional Total
RTC	Resolution Trust Corporation
RTCM	Reasonable Transportation Control Measure
RTECS	Registry of Toxic Effects of Chemical Substances
RUP	Restricted Use Pesticide
RV	Residual Volume
RVP	Reid Vapor Pressure
RWC	Residential Wood Combustion
RWQCB	Regional Water Quality Control Board (California)
S&A	Sampling and Analysis
S&A	Surveillance and Analysis
S/S	Solidification/Stabilization
SA	Social Accountability
SA	Special Assistant

SA	Sunshine Act
SAB	Science Advisory Board
SAC	Starved Air Combustion
SAC	Suspended and Cancelled Pesticides
SAGE	Strategic Advisory Group on the Environment
SAME	Society of American Military Engineers
SANE	Sulfur and Nitrogen Emissions
SANSS	Structure and Nomenclature Search System
SAP	Sampling & Analysis Plan
SAP	Scientific Advisory Panel
SAR	Start Action Request
SAR	Supplied-Air Respirator
SARA	Superfund Amendments and Reauthorization Act
SAS	Special Analytical Services
SASS	Source Assessment Sampling System
SASW	Spectral Analysis of Surface Waves
SB	Senate Bill
SBA	Small Business Act
SBA	Small Business Administration
SBE	State Board of Equalization
SC	Subcommittee
SC	Sierra Club
SCA	Secured Creditor Assessment
SCAB	South Coast Air Basin
SCAP	Superfund Consolidated Accomplishments Plan
SCAQMD	South Coast Air Quality Management District
SCBA	Self-Contained Breathing Apparatus
SCFM	Standard Cubic Feet per Minute
SCLDF	Sierra Club Legal Defense Fund

SCR	Selective Catalytic Reduction
SCRAM	State Consolidated RCRA Authorization Manual
SCRC	Superfund Community Relations Coordinator
SCS	Soil Conservation Service
SCS	Supplementary Control Strategy
SCS	Supplementary Control System
SCWO	Supercritical Water Oxidation
SD	Standard Deviation
SDG	Sample Delivery Groups
SDI	Subchronic Daily Intake
SDWA	Safe Drinking Water Act
SEA	State Enforcement Agreement
SEA	State/EPA Agreement
SEAM	Superfund Exposure Assessment Manual
SEAS	Strategic Environmental Assessment System
SEC	Security and Exchanges Commission
SEIA	Socioeconomic Impact Analysis
SEM	Scanning Electron Microscope
SEM	Standard Error of the Means
SEP	Standard Engineering Practice
SERC	State Emergency Response Commission
SES	Secondary Emissions Standard
SETS	Site Enforcement Tracking System
SF	Slope Factor
SF	Standard Form
SFA	Spectral Flame Analyzers
SI	International System of Units
SI	Site Investigation
SI	Spark Ignition

SIC	Standard Industrial Classification
SIMS	Secondary Ion-Mass Spectrometry
SIP	State Implementation Plan
SITE	Superfund Innovative Technology Evaluation
SIU	Significant Industrial User
SMC	Safety Management Certificate
SMCL	Secondary MCL
SMCRA	Surface Mining Control and Reclamation Act
SME	Small and Medium Sized Enterprise
SMO	Sample Management Office
SMSA	Standard Metropolitan Statistical Area
SNAAQS	Secondary National Ambient Air Quality Standards
SNAP	Significant Noncompliance Action Program
SNARL	Suggested No Adverse Response Level
SNC	Significant Noncompliers
SNUR	Significant New Use Rule
SO <sub>2</sub>	Sulfur Dioxide
SOC	Synthetic Organic Chemicals
SOCMI	Synthetic Organic Chemicals Manufacturing Industry
SOP	Standard Operating Procedure
SOR	Standard Oxygen Required
SOSG	Standard Operating Safety Guide
SOTDAT	Source Test Data
SOTE	Standard Oxygen Transfer Efficiency
SOTR	Standard Oxygen Transfer Rate
SOW	Scope of Work
SOW	Statement of Work
SO <sub>x</sub>	Sulfur Oxides
SP	Self-Potential

SP	Spontaneous-Potential
SPAR	Status of Permit Application Report
SPC	Statistical Process Control
SPCC	Spill Prevention, Containment, and Countermeasure
SPE	Secondary Particulate Emissions
SPECS	Specifications
SPF	Structured Programming Facility
SPI	Strategic Planning Initiative
SPL	State Priority List
SPLMD	Soil-Pore Liquid Monitoring Device
SPMS	Special Purpose Monitoring Stations
SPMS	Strategic Planning and Management System
SPS	Strategic Policy Statement
SQBE	Small Quantity Burner Exemption
SQG	Small Quantity Generator
SQL	Sample Quantitation Limit
SRAP	Superfund Remedial Accomplishment Plan
SRC	Solvent-Refined Coal
SRL	Soil Remediation Levels
SRM	Standard Reference Method
SRT	Sludge Retention Time
SS	Settleable Solids
SS	Superfund Surcharge
SS	Suspended Solids
SSA	Sole Source Aquifer
SSAC	Soil Site Assimilated Capacity
SSC	State Superfund Contracts
SSD	Standards Support Document
SSEIS	Standard Support and Environmental Impact Statement

SSI	Size Selective Inlet
SSIES	Stationary Source Emissions and Inventory System
SSMS	Spark Source Mass Spectrometry
SSN	Social Security Number
SSURO	Stop Sale, Use and Removal Order
STARS	Superfund Transactions Automated Retrieval System
STEL	Short-Term Exposure Limit
STEM	Scanning Transmission-Electron Microscopy
STEP	Strategies for Today's Environmental Partnership
STLC	Soluble Threshold Limit Concentration
STP	Sewage Treatment Plant
STP	Standard Temperature and Pressure
SUBTAG	Subtechnical Advisory Group
SUD	Safe Use Determination
SUP	Standard Unit of Processing
SVOC	Semivolatile Organic Compound
SW	Slow Wave
SWA	Solid Waste Administration
SWANA	Solid Waste Association of North America
SWAT	Solid Waste Air Quality Tests
SWAT	Solid Waste Assessment Tests
SWDA	Solid Waste Disposal Act
SWDSCMA	Solid Waste Disposal Site Cleanup Management Account
SWE	Society of Women Engineers
SWMB	State Solid Waste Management Board
SWMU	Solid Waste Management Unit
SWRCB	State Water Resources Control Board
SWTCP	Surface Water Toxic Controls Program
TA	Ambient Air Temperature

TA	Technical Assistance (EPA)
TAL	Target Analyte List
TALMS	Tunable Atomic Line Molecular Spectroscopy
TAMS	Toxic Air Monitoring System
TAP	Technical Assistance Program
TAT	Technical Assistance Team
TBT	Tributyltin
TC	Target Concentration
TC	Technical Center
TC	Toxic Concentration
TC	Technical Committee
TC/SC	Technical Committee/Subcommittee
TCA	1,1,1 –Trichloroethane
TCDD	Dioxin (Tetrachlorodibenzo-p-dioxin)
TCDF	Tetrachlorodibenzofurans
TCE	Trichloroethylene
TC	Toxicity Characteristic
TCL	Target Compound List
TCM	Transportation Control Measure
TCP	Transportation Control Plan
TCP	Trichloropropane
TCP	Tricresyl Phosphate
TCPL	Toxicity Characteristic Leachate Procedure
TCRI	Toxic Chemical Release Inventory
TD	Toxic Dose
TDS	Total Dissolved Solids
TEAM	Total Exposure Assessment Model
TEG	Tetraethylene Glycol
TEGD	Technical Enforcement Guidance Document

TEM	Transmission Electron Microscopy
TES	Technical Enforcement Support
TFS	Total Fuel Hydrocarbons
THC	Total Hydrocarbons
THM	Trihalomethane
TI	Temporary Intermittent
TI	Therapeutic Index
TI/RE	Toxicity Investigation/Reduction Evaluation
TIBL	Thermal Internal Boundary Layer
TIC	Technical Information Coordinator
TIC	Tentatively Identified Compounds
TIM	Technical Information Manager
TIP	Total Ionization Probe
TIP	Transportation Improvement Program
TISE	Take It Somewhere Else
TITC	Toxic Substances Control Act Interagency Testing Committee
TKN	Total Kieldahl Nitrogen
TL	Target (Cleanup) Level
TLC	Total Lung Capacity
TLV	Threshold Limit Value
TMB	Technical Management Board
TMI	Three Mile Island
TNB	Trinitrobenzene
TNS	The Natural Step
TNT	Trinitrotoluene
TOA	Trace Organic Analysis
TOC	Total Organic Carbon
TOC	Total Organic Compound
TOX	Tetradichloroxylene

TOX	Total Organic Halogens
TPCA	Toxic Pits Cleanup Act
TPH	Total Petroleum Hydrocarbons
TPQ	Threshold Planning Quantity
TPSIS	Transportation Planning Support Information System
TPTH	Triphenyltinhydroxide
TPY	Tons per Year
TQM	Total Quality Management
TRC	Technical Review Committee
TRD	Technical Review Document
TRI	Toxic Releases Inventory
TRIP	Toxic Release Inventory Program
TRPH	Total Recoverable Petroleum Hydrocarbons
TS	Total Solids
TSA	Technical Systems Audit
TSC	Toxic Substances Coordinator
TSCA	Toxic Substances Control Act
TSCATS	TSCA Test Submissions Database
TSCP	Toxic Substances Control Program
TSD	Technical Support Document
TSDF	Treatment, Storage, and Disposal Facility
TSI	Thermal System Insulation
TSM	Transportation System Management
TSP	Total Suspended Particulates
TSS	Total Suspended (non-filterable) Solids
TSS	Total Suspended Solids
TTFA	Target Transformation Factor Analysis
TTHM	Total Trihalomethane
TTLC	Total Threshold Limit Concentration

TTO	Total Toxic Organics
TTU	Transportable Treatment Unit
TUHC	Total Unburned Hydrocarbons
TVA	Tennessee Valley Authority
TWA	Time Weighted Average
TWC	Texas Water Commission
UAC	User Advisory Committee
UAM	Urban Airshed Model
UAPSP	Utility Acid Precipitation Study Program
UAQI	Uniform Air Quality Index
UARG	Utility Air Regulatory Group
UCG	Ultra Clean Coal
UCL	Upper Control Limit
UCS	Unconfined Compressive Strength
UDMH	Unsymmetrical Dimethyl Hydrazine
UEL	Upper Explosive Limit
UFC	Uniform Fire Code
UFL	Upper Flammable Limit
UIC	Underground Injection Control
UKAS	United Kingdom Accreditation Service
ULF	Upper Flammability Limit
UMTRCA	Uranium Mill Tailings Radiation Control Act
UN	United Nations
UNAMAP	Users' Network for Applied Modeling of Air Pollution
UNCED	United Nations' Conference on the Environment and Development
UNEP	United Nations' Environmental Program
UNIDO	United Nations' Industrial Development Organization
US TAGS	United States Technical Advisory Group
USA	United States Army

USAF	United States Air Force
USAO	United States Attorney's Office
USATHAMA	United States Army Toxic and Hazardous Materials Agency
USBM	United States Bureau of Mines
USBS	United States Bureau of Standards
USC	United States Code
USCA	United States Code Annotated
USCG	United States Coast Guard
USCS	Unified Soil Classification System
USDA	United States Department of Agriculture
USDOJ	United States Department of the Interior
USDW	Underground Sources of Drinking Water
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USGS	United States Geological Survey
USMC	United States Marine Corps
USN	United States Navy
USNC	United States National Committee
USNRC	United States Nuclear Regulatory Commission
USPHS	United States Public Health Service
USPS	United States Postal Service
UST	Underground Storage Tank
USWAG	Utility Solid Waste Activities Group
UTM	Universal Transverse Mercator
UV	Ultraviolet
UZM	Unsaturated Zone Monitoring
VA	Veterans Administration
VCM	Vinyl Chloride Monomer
VE	Visual Emissions

VEO	Visible Emission Observation
VFS	Vertical Electric Sounding
VHS	Vertical and Horizontal Spread Model
VHT	Vehicle-Hours of Travel
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound
VOS	Vehicle Operating Survey
VP	Vapor Pressure
VPP	Voluntary Protection Program
VSI	Visual Site Inspection
VSS	Volatile Suspended Solids
WAP	Waste Analysis Plan
WAS	Wasting Rate
WAVE	Water Alliances for Voluntary Efficiency
WBCSD	World Business Council for Sustainable Development
WD	Working Draft
WDR	Waste Discharge Report
WDROP	Distribution Register of Organic Pollutants in Water
WEC	World Environmental Centre
WEEL	Workplace Environmental Exposure Level
WENDB	Water Enforcement National Data Base
WERL	Water Engineering Research Laboratory
WES	Waterways Experiment Station
WET	Waste Extraction Test
WG	Working Group
WH	Watt-hour
WHO	World Health Organization
WICE	World Industry Council for the Environment
WICEM	World Industry Conference on Environmental Management

WL	Working Level
WLA/TDML	Waste Load Allocation/Total Maximum Daily Load
WLM	Working Level Months
WMMA	Waste Materials Management Act
WQMP	Water Quality Management Plan
WP	Work Plan
WPCF	Water Pollution Control Federation
WQA	Water Quality Act of 1987
WRC	Water Resources Council
WRDA	Water Resources Development Act
WRI	World Resources Institute
WSF	Water Soluble Fraction
WSRA	Wild and Scenic Rivers Act
WTP	Water Treatment Plant
WWF	World Wildlife Fund
XE	Xenon
YTD	Year to Date
ZHE	Zero Headspace Extractor
ZI	Zero Intercept
ZOI	Zone of Incorporation
ZRL	Zero Risk Level

