



Ames Procedural Requirements

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COMPLIANCE IS MANDATORY

Chapter 7 Environmental Training

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7.1. Applicability

This instruction is applicable to all civil servant, contractor employees, and tenant personnel who: 1.) work in buildings where hazardous materials are used or stored, 2.) work directly with hazardous materials, or 3.) work on the hazardous waste site at Ames Research Center, or the Crows Landing Flight Facility.

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7.2. Purpose

This chapter prescribes the roles, responsibilities, and program details for the environmental training program at NASA Ames Research Center.

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7.3. Authority

The specific authority to implement an environmental training program is given by federal, state and local laws, regulations, and executive orders which relate to environmental protection or spill response and cleanup. These laws and regulations include:

1. Occupational Safety and Health Act of 1970 (PL 91-596); CFR 29 Section 1910.120 Hazardous Waste Operations and Emergency Response (HazWOPER),
2. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended (42 U.S.C. 9601 et seq.), including the Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. 11001 et. seq.).
3. Resource Conservation and Recovery Act (RCRA) of 1976, as amended (42 U.S.C. 6002 et. seq.).
 - 40 CFR Part 262 Standards Applicable to Generators of Hazardous Waste
 - 40 CFR Part 265 Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Part 16 Personnel training
4. Clean Water Act (CWA) and Spill Prevention, Control, and Countermeasures (SPCC)
5. National Environmental Policy Act (NEPA)
6. Executive Order 12856 of August 3, 1993, Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements and Greeing the Government through Leadership in Environmental Management.
7. State and local laws and regulations related to environmental training:
 - California Code of Regulations, Title 26, Toxics.

- California Code of Regulations, Title 19, Office of Emergency Services.
 - California Health and Safety Code, Chapter 6.95.
 - Santa Clara County Hazardous Material Storage Permit Ordinance No. NS-517.31.
 - Santa Clara County Toxic Gas Ordinance No. NS-517-44.
 - Palo Alto Sewer Use Ordinance, Chapter 16.09.035 Personnel Orientation.
8. NASA Policy Directive 8800.16, NASA Environmental Management.
 9. NASA Ames Policy Directive 8800.4, Ames Environmental Program.
 10. Uniform Fire Code and National Fire Protection Association Standards.

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7.4. Policy

It is the policy of NASA Ames Research Center to:

1. Comply with all applicable federal, state, and local regulations, executive orders, and regulatory requirements pertinent to environmental training.
2. Consult, as appropriate, with federal, state and local agencies about the best techniques and methods to comply with environmental training requirements.
3. Provide environmental training which:
 - Educates NASA Ames personnel about regulations and requirements which protect the environment and ensures the proper disposal of hazardous waste;
 - Prepares NASA Ames personnel to respond to workplace accidents, emergencies and chemical spills;
 - Encourages employees to minimize the volume and toxicity of waste generated and to recycle materials where possible;
 - Supplies information regarding hazardous materials management;
 - Describes methods to pro-actively prevent pollution of the environment through spill prevention and storm water pollution prevention training;
 - Supplies NASA Ames personnel with the information to properly conduct asbestos, lead, and PCB abatement activities;
 - Heightens awareness among Ames personnel which promotes the protection of cultural, historical, and biotic resources located at NASA Ames Research Center.
 - Inform Ames personnel of the requirements of the National Environmental Policy Act;
 - Inform Ames personnel about the Ames Environmental Management System, including how their work relates to significant environmental aspects, and their roles in the EMS.
 - Inform Ames personnel of onsite soil and groundwater contamination

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7.5. Responsibility

NASA Ames Research Center is committed to providing appropriate environmental training to all affected employees in order to ensure regulatory compliance and environmental protection. Responsibility for workplace environmental training is shared between employees, management, and the Environmental Services Office, Code QE (Environmental Office). Achieving environmental training objectives involves participation, cooperation, and recognition of individual responsibilities.

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7.5.1 Ames Hazardous Materials Users Shall:

1. Understand and comply with all applicable environmental requirements and restrictions for each hazardous material used before performing assigned tasks;
2. Attend and participate in scheduled environmental training classes as required to ensure adequate knowledge and understanding of environmental requirements;
3. Know emergency procedures, emergency numbers, location of spill control equipment and personal protective equipment, evacuation routes, and assembly areas.

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7.5.2 Line Management Shall:

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7.5.3 Contractors Shall:

1. Understand and comply with all applicable environmental requirements and restrictions for

each hazardous material used before performing assigned tasks;

2. Attend and participate in scheduled environmental training classes as required to ensure adequate knowledge and understanding of environmental requirements;
3. Know emergency procedures, emergency numbers, location of spill control equipment and personal protective equipment, evacuation routes, and assembly areas.

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7.5.4 Resident Agency Hazardous Materials Users Shall:

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7.5.5 Environmental Office Shall:

1. Identify laws and regulations to which Ames must adhere and to which employees must be trained;
2. Develop Ames environmental training policy and program to implement the training requirements of environmental laws and regulations;
3. Implement an environmental training program which includes: preparing and presenting required training classes, consulting with and supporting supervisor's environmental training needs;
4. Assist managers and supervisors in evaluating the environmental training needs of their employees, and in documenting their employees' environmental job descriptions.
5. Ensure that personnel whose jobs have environmental impacts/aspects have attended the required training classes, and that required records are in the employees' personnel file
6. Attend environmental training classes related to their program area(s) of responsibility, once every three years, and update class as needed.

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7.5.6 Contracting Officers Technical Representatives (COTR's) Shall:

1. Obtain sufficient training to ensure that they are familiar with the environmental requirements applicable to the jobs for which they are the technical representative;
2. Ensure contractors allocate sufficient resources to employee training to achieve compliance with applicable regulations;
3. Ensure that contractors personnel are informed about task specific issues associated with their work place, ie.: hazards associated with specific chemicals used in or near their workplace, location and use of spill control equipment, evacuation routes, fire extinguisher locations, eyewash locations, and hazardous waste management requirements;

4. Understand environmental issues, rules, and policies for each chemical used by contractors for which they are the technical representative;
5. Ensure that contract workers assigned to tasks which may result in soil disturbance or facility demolition understand that contamination in subsurface environment and building materials (ie.: asbestos, lead, PCBs) may affect those tasks.
6. Ensure flow down of 7.5.6 bullets 1 through 5 to any subcontractors.

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7.6. Definitions

7.6.1 First Responder Awareness (FRA) Level

"First Responder Awareness (FRA) Level" are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying the authorities of the release. (19CCR2510(f)).

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7.6.2 First Responder Operations (FRO) Level

"First Responder Operations (FRO) Level" are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, the environment, or property from the effects of the release. They are trained to respond in a defensive manner without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. (19CCR2510(g)).

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7.7. Affected Operations

Training requirements apply to any operation or individual using, handling, or storing or working in a building where there are hazardous substances or generating hazardous waste or working in an area with protected natural resources. Training requirements also apply to any individual working in a contaminated subsurface environment or disturbing building materials contaminated with hazardous materials such as lead paint or asbestos. Examples of affected operations are: photo processing, solvent cleaning, construction projects, vehicle and equipment maintenance, coating application, machining, fueling, and "wet-bench" laboratory research.

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7.8. Environmental Training Requirements

Persons who work with or may be exposed to hazardous materials or wastes are required by regulation to receive environmental and safety training applicable to their work or potential to harm the environment. Depending on the potential for causing environmental damage, this results in differing levels of required training. In general, the potential for workers to cause environmental damage can be characterized as follows:

- Works in building containing hazardous materials and may be potentially exposed to hazardous materials during a spill, fire, or other accident. Typical jobs of this type include: secretarial, clerical, engineering, information systems, materials handling, etc.
- Works directly with hazardous materials and/or generates hazardous waste during the course of their work. Typical jobs of this type include: laboratory worker (chemical and life sciences), machinist, model maker, welder, equipment painter, electronics assembler, mechanic (wind tunnel and vehicle), photo lab, etc.
- Works in construction or facility maintenance and generates hazardous waste or uses hazardous materials. Personnel in facility maintenance and construction also have potential to affect the environment by disturbing hazardous waste contaminated soils and asbestos or lead. Typical jobs with type of exposure include: plumber, electrician, construction laborer, painter (buildings), carpenter, facilities mechanic, HVAC repair or maintenance, steam plant operator, etc.

In addition to training required as a result of general work with hazardous materials or hazardous wastes there may be work activity specific or chemical specific environmental training required. Work activities requiring specific training include:

- Managing above ground storage tanks;
- Using hazardous materials where they may contaminate storm water runoff;
- Managing users of hazardous materials;
- Generates hazardous waste;
- Generates or manages medical waste;
- Operating a hazardous waste treatment unit;
- Using toxic gases;
- Handling PCB-containing materials or equipment;
- Working with lead-containing materials; and
- Working with asbestos-containing materials;
- Excavation or other distribution of soil and/or groundwater; and
- Planning or managing programs or projects that could impact the environment.

Workers who handle hazardous chemicals must attend a class specific to those chemicals/materials in addition to the general classes required for hazardous materials users.

Note: In addition to the environmental training for users of specific chemicals outlined above, there are also OSHA safety training requirements for workers exposed to some chemicals. See AHB 1700.1 Chapters 24, 25, 30, and 35. Some of the activities listed above, specifically, working with lead and asbestos contaminated materials, have detailed safe handling and training requirements specified by OSHA. NASA Ames training classes are designed so that both environmental and health/safety training requirements are met simultaneously.

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7.8.1 Works in building containing hazardous materials and may be potentially exposed to hazardous materials during a spill, fire, or other accident.

Personnel who work in buildings which contain hazardous materials are required to complete the

following NASA Ames Safety, Health, and Environmental training classes:

1. Orientation
2. Building Emergency Action Plan
3. Hazard Communication

Completion of these two classes will meet the training objectives and minimum training time requirements (4-8 hours) outlined in 19CCR2520(a) Haz Mat Emergency Response - First Responder Awareness Level.

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7.8.2 Working directly with Hazardous Materials and/or Generating Hazardous Waste

Personnel who work directly with hazardous materials and/or generate hazardous waste during the course of their work are required to complete the following NASA Ames Safety Health, and Environmental training classes (22CCR66265.16(d)(3)):

1. Building Emergency Action Plan
2. Chemical Safety for First Responders
3. Decontamination Procedures
4. Hazard Communication
5. Hazardous Waste and Environmental Essentials
6. Personal Protective Equipment
7. Spill Prevention, Control, and Countermeasures
8. Storm Water Pollution Prevention

Completion of these eight (8) classes will also meet the training objectives and minimum time requirements (16-24 hours) for Hazardous Materials Emergency Response - First Responder Operations Level training outlined in 19CCR2520(b). Personnel who generate hazardous waste are not allowed to work unsupervised until they have completed this course of training (22CCR66265.16(b)). To maintain Ames Safety Health and Environmental Office authorization to generate hazardous waste, workers who generate hazardous waste must also annually attend a Hazardous Waste and Environmental Essentials refresher training class or complete the NASA Ames Hazardous Waste CD ROM (22CCR66265.16(c)) or equivalent.

Personnel who attend OSHA required chemical specific training, may be able to substitute for one or more of the classes listed above with concurrence from the Environmental Office.

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7.8.3 Works in Construction, Remodeling, Renovation, or Demolition

Personnel who work in construction or facility maintenance who might disturb hazardous waste contaminated soils, asbestos, lead, or PCB contaminated surfaces or equipment are required to complete the following NASA Ames Safety, Health, and Environmental training classes:

1. Asbestos Awareness
2. Building Emergency Action Plan
3. Decontamination Procedures
4. Green Construction
5. Hazard Communication
6. Hazardous Waste and Environmental Essentials
7. Lead Awareness
8. Personal Protective Equipment
9. Spill Prevention, Control, and Countermeasures
10. Storm Water Pollution Prevention
11. PCB Management
12. Soil and Groundwater Contamination

Onsite construction personnel who generate hazardous waste are also not allowed to work unsupervised until they have completed this course of required training (22CCR66265.16(b)). To maintain authorization to generate hazardous waste construction workers who generate hazardous waste must also annually attend a Hazardous Waste and Environmental Essentials refresher training class or complete the NASA Ames Hazardous Waste CD ROM (22CCR66265.16(c)).

Construction and facility maintenance personnel must receive special training to work at an "uncontrolled hazardous waste site" (29CFR1910.120(a)(3)) such as can be found at NASA Ames Research Center. Construction and facility maintenance workers must complete this training because they: may be exposed to hazardous waste contaminated soils or ground water, work on-site regularly, and work in areas:

1. Which have been monitored and fully characterized indicating that exposures are under permissible exposure limits and published exposure limits,
2. Where respirators are not necessary, and
3. Where characterization indicates that there are no health hazards or the possibility of an emergency developing.

Construction and facility maintenance personnel who complete the twelve (12) classes listed above and obtain one (1) day of actual supervised field experience at the NASA Ames site meet the operational, subject, and time requirements specified in 29CFR1910.120(e)(3)(iii).

Construction and facility maintenance personnel can substitute attendance at a commercially available 24 hour HazWOpER training course for some of the classes listed above, but must still complete a day of supervised field-work and attend the following site-specific training courses:

1. Site Briefing/Green Construction
2. Hazardous Waste and Environmental Essentials and Spill Response

Note: The Site Briefing/Green Construction class includes course material which covers asbestos awareness, lead awareness, storm water pollution prevention, and PCB management.

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7.8.3.2 Personnel other than defined in 7.8.3.1

Those personnel shall have completed a minimum of 24 hours of a HazWOpER class, plus will be familiar with the Site Specific Contamination Fact Sheet.

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7.8.4 Work Activity or Chemical Specific Environmental Training

Personnel who work with specific materials or in specific situations may also require specific environmental training. Work activities requiring specific training include:

1. Managing above ground storage tanks;
2. Operating a hazardous waste treatment unit;
3. Using hazardous materials where they may contaminate storm water runoff;
4. Using toxic gases;
5. Handling PCB-containing materials or equipment;
6. Working with lead-containing materials;
7. Working with asbestos-containing materials.
8. Generates or manages medical waste.

Note: Work activity or chemical specific training covered in this section is in addition to the minimum training requirements for hazardous materials users found in Section 7.8.2.

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7.8.4.1 Managing Above Ground Storage Tanks

Operators of above ground storage tanks must receive training as outlined in the NASA Ames Research Center Spill Prevention, Containment, and Countermeasures plan (SPCC) to ensure compliance with 40 CFR 112.21 Facility response training and drills/exercises. The core content of this training ensures that operators of above ground storage tanks and emergency response team members can respond effectively to oil or fuel spills. Subjects covered in this training include:

- Details of the Ames facility layout relevant to spill control and containment
- Specific spill prevention procedures
- Inspection criteria for above ground tanks
- Reporting and responding to oil spill incidents

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7.8.4.2 Operating a Hazardous Waste Treatment Unit

Operators of hazardous waste treatment units are required to obtain training per 22 CCR

66270, and HSC 25200 et al. Hazardous waste treatment unit operators must demonstrate a basic understanding of California requirements for hazardous waste treatment systems under the tiered permitting rules. Specific areas of knowledge include:

- Definition of "treatment";
- Requirements under Conditional Authorization;
- Phase I Environmental Assessment Checklist;
- Monitoring and record-keeping requirements;
- Closure requirements;
- Contingency plan and emergency procedures

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7.8.4.3 Using Hazardous Materials Where They May Contaminate Storm Water Runoff

Personnel who handle hazardous materials outside buildings or secondary containment areas which are exposed to storm water must be trained per Federal regulations 40 CFR 122-4 and California State Regional Water Quality Control Board NPDES requirements. Typical jobs covered under this training requirement include: construction workers, building repair workers, facilities maintenance personnel, groundskeepers, equipment maintenance personnel, mechanics, materials handlers, shipping and receiving personnel, flight operations personnel, and waste collection or treatment systems operators. Specific training subject are:

- Overview of Storm Water Pollution Prevention (SWPP) Plan;
- Definitions and terminology;
- Review of recommended best management practices for the prevention of storm-water pollution;
- Routine activity and equipment inspections; and
- Prohibited discharge actions and emergency procedures.

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7.8.4.4 Using Toxic Gases

Personnel who work directly with toxic gases and emergency response team members who may be required to respond to toxic gas releases must be trained to safely handle and contain these materials (Santa Clara County Ordinance NS-517.14: Regulation of facilities where materials which are or may become toxic gases are found.) Subjects covered in this training must include:

- Location of all on-site toxic gas storage locations;
- Operation and maintenance of toxic gas monitoring equipment;
- Emergency response plans for toxic gas releases;
- Toxicity, incompatibilities, and chemical nature of toxic gases stored at NASA Ames Research Center; and
- Fire department/facility liaison procedures in the event of a release.

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7.8.4.5 Handling PCB Containing Materials or Equipment

Personnel who have involvement with PCB containing equipment (i.e.: transformers, switch gear, capacitors, ballasts, hydraulic oils, etc.) need to be trained per 40CFR761 (TSCA). PCB handlers must demonstrate a basic understanding of regulations governing the handling, disposal, and clean up of PCBs. Specific training competencies include:

- Typical types of equipment containing PCBs;
- Requirements for proper labeling and marking;
- Implementing routine inspections;
- Potential health effects;
- Long-term threat to the environment;
- Decontamination procedures; and
- Procedures to follow in the event of a release.

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7.8.4.6 Working with Lead Containing Materials

Personnel who work with lead-containing materials or who supervise workers who work with lead-containing materials must be trained to ensure environmental contamination is prevented and worker protection ensured (29 CFR 1926.62 and 1910.1025.) Specific training subjects covered in the lead awareness course include:

- Environmental issues and waste management requirements;
- Health effects/medical surveillance;
- Recognizing lead contaminated surfaces;
- Special techniques and controls required during lead abatement operations; and
- Worker protection: engineering controls, safe work practices, and respiratory protection.

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7.8.4.7 Working with Asbestos Containing Materials

Personnel who may come into contact with or may disturb Asbestos Containing Materials (ACM) during their normal work activities are required to attend training which protects them and the environment from asbestos fiber releases (29 CFR 1910.1001 and 40 CFR 763.92.) Subjects covered in the asbestos awareness class include:

- Key concepts of asbestos hazard control;
- Examples of ACM's at NASA Ames Research Center;
- Recognition of ACM deterioration and damage;
- Safe work practices;

- Disposal of asbestos containing materials; and
- Overview of NASA Ames Research Center operations and maintenance

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7.8.5 Manages or supervises Operations or is a COTR for Operations described in 7.8.1 through 7.8.4 above, or is a program manager or project manager.

NASA Ames Research Center managers and supervisors must attend the Managers Safety, Health, and Environmental training course to receive specific training regarding their responsibilities for managing hazardous waste and the resources available to them to ensure their compliance with laws and regulations. Specific environmental subjects covered in this training course include:

1. Basic understanding of environmental laws and standards;
2. Federal, state, local and NASA environmental policies, laws, and regulations;
3. Roles and responsibilities of line management and the Environmental Office;
4. NASA environmental resources for managers and supervisors;
5. Environmental training requirements for employees;
6. Requirements for environmental input analysis pursuant to the National Environmental Policy Act; and
7. Lead, asbestos, and PCB awareness

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7.9. Training Documentation and Records

The following records shall be maintained by the Safety Office in compliance with 40CFR265.16 and 22CCR66265.16 Personnel Training:

7.9.1 Class Attendance Rosters

Class attendance rosters will be circulated during each training session. These rosters will contain the following information:

1. Class name, date, and time;
2. Instructor name;
3. Employees nameand phone number;
4. Organizational affiliation of personnel and employer's name;
5. Supervisor's name;
6. Mail stop; and
7. Employee's signature.

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7.9.2 Course Information and Documentation

A detailed written description of each environmental course is maintained by the Safety Office. The course description is contained in the instructor's course manual for each respective course. A copy of the instructor manual for each environmental training course is kept in the Safety Office for reference and as a backup should the original instructor's copy be misplaced or lost. This information meets the course documentation requirement found in 22CCR66265.16(d)(3).

The following courses are written in such a way that every required course objectives identified in 19CCR2520(a) Haz Mat Emergency Response - First Responder Awareness Level are met:

1. Building Emergency Action Plan
2. Hazard Communication

The following courses are written in such a way, when taken with the Building Emergency Action Plan and Hazard Communication classes, that every required course objective identified in 19CCR2520(b) Haz Mat Emergency Response - First Responder Operational Level are met:

1. Decontamination Procedures
2. Green Construction TBD
3. Hazardous Waste and Environmental Essentials and Spill Response
4. Personal Protective Equipment
5. Spill Prevention, Control and Countermeasures
6. Storm Water Pollution Prevention
7. Soil and Groundwater Contamination

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7.9.3 Training Data

Information from class attendance rosters is entered in the Safety Office training database. Training summary reports are also available from the Safety Office on an as-requested basis to all Ames employees and managers.

Class sign-in rosters are filed with employee test data by year, class, and date and maintained in locked file cabinets to ensure confidentiality of personnel records. The Safety Office is responsible for maintaining environmental training data for all civil servants and contractors who attend NASA Ames Research Center sponsored environmental training.

Training records on current personnel must be kept until closure of the facility per 22CCR66265.16(e). Training documentation for personnel formerly working at the Ames Research Center may be disposed of after three (3) years.

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7.10. Sources of Additional Information or Assistance

- Environmental Office, ([REDACTED])

- Environmental Office WWW Home Page <http://q.arc.nasa.gov>
- NASA Ames Research Center Safety, Health, and Environmental Training Catalog

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