

JSC Safety and Health Requirements	JPR No.	1700.1L
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Chapter 9.2 Hazard Communication

This could be you . . .

A laboratory worker spilled an unknown chemical and the facility was evacuated, causing lost work time for several employees.

An employee was exposed to a hazardous material. The SDS wasn't immediately available for hazard information, causing medical treatment to be delayed.

9.2.1 Applicability of this chapter

You are required to follow this chapter if you work at JSC or a JSC field site. You are required to follow this chapter if you store, use, or dispose of hazardous materials at JSC. If you work at WSTF, follow WSTF requirements meeting the intent of this chapter.

9.2.2 What this chapter covers

This chapter is JSC's written Hazard Communication Program to meet OSHA 29 CFR 1910.1200, "Hazard Communication Standard." This standard requires JSC to inform workers of the hazards of the materials they work with or that exist in their work areas.

9.2.3 How JSC uses supplier information to determine hazards

JSC rarely makes hazardous materials but does use them. The Center relies on Safety Data Sheets (SDSs) from manufacturers and suppliers to identify hazards and mitigations. JSC gives each SDS a unique JSC number. JSC organizations complete hazard assessments incorporating the information in the SDS as necessary to identify and control risks.

9.2.4 Assessing the hazards of hazardous materials

9.2.4.1 JSC determines hazards through hazard assessments as described in Chapter 2.3, "Hazard Analysis." Employees shall follow these guidelines for hazard assessments for the purpose of this written program:

- a. Classify all hazards as physical or health hazards (see definition in Appendix A).
- b. Use, as baselines, any technical information from the supplier, including SDSs and any pertinent information from the sources in 29 CFR 1910.1200.
- c. When hazardous materials are created at JSC, the responsible organization shall create the SDSs for the products per the guidelines of 29 CFR 1910.1200 (the current OSHA HazCom 2012 standard), Appendices A and B.

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9.2.5 Reporting additional hazards identified with hazardous materials

9.2.5.1 Employees or organizations identifying a hazard that isn't in an SDS or a material without an SDS shall submit a report to Occupational Health and the Safety and Test Operations Division within 30 days of completing the hazard assessment detailing the following:

- The hazard in question and any potential hazards with the new material.
- The source of the information.
- An analysis of potential impacts.
- Recommendations to reduce risk.
- Any specific information that may refute the hazard determination.

NOTE: If there is conflicting information, attempt to compare the technical merits.

9.2.6 Mixing hazardous materials

9.2.6.1 Employees who mix "as-received" hazardous materials with other materials for later use shall:

- Do a hazard assessment as described in paragraph 9.2.4 to assess the possible hazards of the mixtures.
- Test the mixture as a whole to determine its hazardous characteristics if feasible. Base all hazard assessments on positive data that either establish or refute the mixture as hazardous.
- Follow this alternate process if testing the mixture as a whole isn't feasible:
 - (1) Assume the mixture has the same health hazards as its hazardous components present in concentrations greater than 1.0% by weight or volume for non-carcinogens. If there is reason to suspect an ingredient present at a concentration < 1% will affect classification of the mixture for acute toxicity, consider that ingredient to be relevant.
 - (2) Assume the mixture has the same health hazards as its hazardous components present in concentrations greater than 0.1% by weight or volume for known or suspected carcinogens.
 - (3) Identify known reaction products not present in the original components. If there is reason to suspect an ingredient present at a concentration < 0.1% will affect classification of the mixture for acute toxicity, consider that ingredient to be relevant.
 - (4) Use relevant and scientifically valid data in place of testing to support any assessment of the physical hazards of the mixture.
 - (5) Indicate in the hazard assessment, the lack of this information.
- Document the results of the hazard assessment and share it with all potential users. Employees who create the mixture are responsible for a complete and accurate hazard assessment.
- Have Occupational Health, the JSC Environmental Office, and the Safety and Test Operations Division review and approve initial shipments and accompanying documentation of such hazardous materials.

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- f. Provide the percentage of each component in the mixture and an SDS for each component with each shipment.
- g. Assume the mixture poses the same hazards as each component, regardless of any prior or existing hazard assessments or test results, if someone using the mixture could be exposed to concentrations of any hazardous component above the OSHA- or ACGIH-permissible exposure limits.

9.2.7 Investigating and studying material exposures

Occupational Health shall conduct investigations and studies of material exposures needed in a work area. This includes sampling the concentration in the atmosphere to determine employee exposure levels.

9.2.8 JSC hazardous materials inventory

The JSC Hazardous Materials Inventory allows for periodic review of all hazardous materials on site. The JSC Hazardous Materials Inventory meets the similar requirements of both the Environmental Protection Agency Superfund Amendments and Reauthorization Act and the OSHA Hazard Communication Standard. Occupational Health maintains JSC's inventory with inputs from the organizations. You may search for the [hazardous materials inventory](http://ks.jsc.nasa.gov/haz/hazmat/recsearch.cfm) for your area at <http://ks.jsc.nasa.gov/haz/hazmat/recsearch.cfm>.

9.2.9 How to use the hazardous materials inventory

9.2.9.1 This inventory reflects the hazardous materials in a work area. Supervisors shall make sure:

- a. All employees in the work area have access to the inventory. Use the inventory as a guide to ensure all necessary SDSs are available.
- b. The hazardous materials inventory is available at specific worksites per directorate instructions or provide access to the on-line inventory.

9.2.10 Contents of a hazardous materials inventory

- a. The inventory shall include all hazardous materials under the control of the work area.
- b. The inventory shall include for each material, as a minimum:
 - (1) The identity of the materials, as written on the label.
 - (2) The JSC SDS numbers.
 - (3) The location of the materials (specify the locations in enough detail to allow someone to find the materials quickly).
 - (4) The amount usually kept on hand.
 - (5) The largest amount ever present in the workplace.
 - (6) The quantity used annually.

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- c. Construction contractors working at JSC shall submit a hazardous materials inventory to Occupational Health at the time work begins and update the inventory at the completion of the work or at least annually. This inventory shall include:
- (1) The names of the materials.
 - (2) The amount of the materials usually kept on hand at JSC.
 - (3) The annual usage of that material.

9.2.11 Employees responsible for entering a work area's items into the inventory

9.2.11.1 Each area shall have someone responsible for evaluating the hazardous materials inventory for that location. Employees responsible for maintaining the hazardous materials inventory for a work area shall:

- a. Contact Occupational Health for a user code and password.
- b. Enter all items into the on-line inventory available on the Health home page.
- c. Continue to list on the inventory any materials the work area runs out of and plans to replenish or continue to use.
- d. Delete items no longer in stock they no longer plan to use during the first quarter after the annual update.
- e. Consider excessing a material if it has not been used during the past year.
- f. Get JSC SDS numbers for all items and record the numbers in the inventory.
- g. Review and correct the inventory at least yearly or whenever quantities or locations change significantly. Some products require quarterly updates. This includes:
 - (1) Entering new materials in the inventory when first received.
 - (2) Removing old materials from the inventory when they are no longer in stock.
- h. Compare incoming materials with the hazardous materials inventory to screen for new chemicals.

NOTE: You can find additional directions for updating the hazardous materials database in the [HazMat Inventory](https://nasa.sharepoint.com/sites/jsc-oh/SitePages/haz-com.aspx) Users' Guide located at: <https://nasa.sharepoint.com/sites/jsc-oh/SitePages/haz-com.aspx>.

9.2.12 Access to the inventory

9.2.12.1 Each directorate shall ensure:

- a. All directorate activities, facilities, and employees related to hazardous materials are completely addressed.
- b. All employees have access to the hazardous materials inventory, SDSs, and a copy of this chapter during their shift.
- c. Employees keep their area hazardous materials inventory up-to-date in the on-line master site inventory.

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9.2.13 Products exempt from this chapter

The products and materials listed in the table below are exempt from the requirements of this chapter.

<i>For . . .</i>	<i>Regulated by . . .</i>	<i>Covering . . .</i>
Hazardous Wastes	29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response," through the Environmental Office	<ul style="list-style-type: none"> Using hazardous chemicals or mixtures to treat hazardous waste is within the extent of hazard communication. While hazardous waste is exempt from JSC's hazard communication program, hazardous waste workers shall have access to all the services and benefits of JSC's hazard communication program. Once you identify a material as a hazardous waste, the material is no longer under JSC's hazard communication program (see JPR 8550.1, "Environmental Compliance Procedural Requirements").
Consumer Products	Consumers Product Safety Act and the Federal Hazardous Substances Act	<ul style="list-style-type: none"> Substances that must be packaged and labeled for the consumer market and their use in the workplace. They shall be used in a manner similar to that of consumer use in the scope of this exemption. Show the intended use is similar to consumer use, which is usually obvious. This exemption does not include paints or WD40. If there is any doubt, contact Occupational Health for help.
Foods, Drugs, Cosmetics	FDA	<ul style="list-style-type: none"> Foods, food additives, fragrances, flavors, color additives, drugs, cosmetics, and medical or veterinary devices in all respects. They are exempt from this program when they are meant for human consumption. This includes drugs that are in solid, final form for a patient to take, such as pills or tablets, or are in retail establishments and packaged for sale to consumers.
Beverage Alcohol	Federal Alcohol Administration Act	Distilled spirits, including beverage alcohol, wine, or malt beverage intended for nonindustrial use in all respects.
Tobacco Products	Federal Alcohol Administration Act	Tobacco products in all respects.
Radioactive or nuclear materials	Human Health and Performance Directorate	All radioactive or nuclear materials and their use (see JPR 1860.2, "Radiological Health Manual")
Pyrotechnic (explosive)	Energy Systems Test Branch and the Aircraft Operations Division (Ellington Field)	Pyrotechnic materials and devices located at JSC and Ellington Field (see JPD 4500.1, "Pyrotechnics – Logistics Management")

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materials and devices		
Wood and wood products	N/A	N/A

9.2.14 Articles other than raw chemicals

9.2.14.1 Employees shall follow these steps to determine whether an article will be considered as a hazardous material:

- First determine whether the item meets the definition of an “article” under 29 CFR 1910.1200. If any item meets all of the criteria, it is an “article” and exempt from the requirements of the Hazard Communication Standard.
- Assess the hazard potential for items failing to meet one or more of the criteria listed in the definition of an article.
- Consider the entire lifetime of the article, including initial fabrication, test, end use, maintenance, storage, demolition, and disposal. Review the results of these assessments at the appropriate review activities, such as design reviews or TRRs. Safety and Occupational Health concurrence is required on the results of these assessments.

NOTE: Examples of articles that clearly fall under JSC’s hazard communication program are welding rods, metal stock, and many construction materials (other than untreated wood).

9.2.15 Labeling storage and transportation containers

- Employees shall label all storage containers, tanks, vessels, drums, etc., meant for holding any quantity of hazardous materials for any period of time. The label shall include the following:
 - The identity of the hazardous material, identical to the trade name on the SDS.
 - Hazard warnings to include the GHS code word and [GHS pictograms](https://www.osha.gov/sites/default/files/publications/OSHA3491QuickCardPictogram.pdf). See <https://www.osha.gov/sites/default/files/publications/OSHA3491QuickCardPictogram.pdf>. Occupational Health will provide guidance in the design and use of hazardous materials labels or other means to warn users of physical and health hazards.
- Employees using containers for transporting hazardous materials to or from JSC, shall identify the containers. The US Department of Transportation (DOT) requires placards on containers (for example, truck, train car, etc.) of hazardous goods meeting certain type and weight requirements that are transported within the U.S. or on U.S. waterways. The identification shall include the following:
 - The name of the authorizing official, the assigned office, or element.
 - The address of the organization authorizing the shipment.
- Employees shall only use shipping containers with DOT approval specific for the material to be shipped.
- While on site, employees shall not transport hazardous materials in a personal vehicle.
- Employees shall not bring personal hazardous materials (i.e., gasoline, etc.) on site.

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9.2.16 Transfer containers

Containers used to quickly transfer a material between containers need not be labeled. This exemption includes beakers, buckets, funnels, portable pumps, and similar equipment. If you do not use all of the material immediately, you must label the container with the identity of the material and hazard warnings to include the GHS code word and GHS pictograms.

9.2.17 Identifying pipeline, ducts, valves, etc.

9.2.17.1 Employees shall clearly identify:

- All pipes, ducts, valves, etc., carrying hazardous materials in any form or visibly connect to hazardous materials sources per Chapter 9.1, "Hazardous Material Safety and Health,"
- Pipes, ducts, etc., connected to hazardous materials sources and not carrying the materials in a manner that is clearly visible to any observer.
- The contents of pipes, ducts, etc., if their contents aren't visible because of obstructions, such as a wall or if they are underground.
- If the number or location of pipes, ducts, etc., in any area makes it difficult to identify each one, hang placards around the area or along its length. Placards may take the form of color coding, labels, or signs. Place placards according to their size, visibility, and the points of approach to the area.

9.2.18 Availability of SDSs

- Employees shall be able to readily access SDSs in their work areas during all work shifts.
- Supervisors shall maintain an up-to-date hardcopy file of SDSs for hazardous materials used in a readily accessible location.
- All SDSs in the work area shall have a JSC SDS number. Replace any unnumbered SDSs with numbered copies from Occupational Health or write the SDS number on the copy in the work area. [SDSs](http://ks.jsc.nasa.gov/haz/msds/msdssearchform.cfm) are also accessible on line through the Health home page at <http://ks.jsc.nasa.gov/haz/msds/msdssearchform.cfm> . See Chapter 9.1 for ordering SDSs for hazardous materials.
- If the SDS in the work area is newer than the one in the SDS database, send a copy of the SDS along with a JF277 to the Hazard Communication Department of Occupational Health.
- If the SDS in the SDS database is older than 3 years old, check with the manufacturer to determine if there is a more current SDS.

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9.2.19 Training for handling hazardous materials

9.2.19.1 Training and certification are the responsibility of line management and shall meet the following:

- a. All JSC team members shall take initial and annual basic Hazard Communication (HazCom) training.
- b. Individuals who work with hazardous materials or those who work in buildings containing hazardous materials shall initially take classroom HazCom training. After taking an instructor-led class, they may take annual training through the on-line HazCom training accessible on SATERN. Individual contractors may arrange to provide their own HazCom training as long as the training meets the requirements of 29 CFR 1910.1200 and this JPR and has been approved by Occupational Health.
- c. Office workers in a building that does not contain hazardous materials may take both initial and annual training via the SATERN computer-based training.
- d. Employees who handle or use hazardous materials, or work in an area with hazardous materials shall also have specific information and training on the hazardous materials in the work area.
- e. Supervisor shall provide this specific information and training when an employee is first assigned, annually, and when new hazards or chemicals are introduced in the work area. Organizations may request substance-specific training from Occupational Health, x36726.
- f. Basic and specific HazCom training shall collectively explain:
 - (1) The requirements of 29 CFR 1910.1200.
 - (2) Operations in the work area where hazardous materials are present.
 - (3) The location and availability of the written HazCom program, where to find the HazMat Inventory for the area, and SDSs.
 - (4) Methods and observations to detect the presence or release of a hazardous material in the work area, such as visual appearance or odor.
 - (5) Physical and health hazards of the materials in the work area.
 - (6) Measures to protect employees from these hazards. This includes specific procedures to protect employees from exposure to hazardous materials, such as work practices, emergency procedures, and personal protective equipment.
 - (7) Details of JSC's HazCom program, including an explanation of the labeling system, the SDSs, and how to obtain and use the appropriate hazard information.

NOTE: HazCom training records are available through SATERN. Records on training completed before March 2007 are available from Occupational Health.

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9.2.20 Information on hazard communication

9.2.20.1 Supervisors shall make the following information available to employees on request:

- a. 29 CFR 1910.1200, "Hazard Communication Standard."
- b. A written copy of this chapter, "Hazard Communication."
- c. SDSs for hazardous materials in your work area.
- d. The hazardous materials inventory for the work area as described in paragraphs 9.2.8 through 9.2.12.

9.2.21 Employees, on-site contractors, and employee representatives can support this program

9.2.21.1 You can support JSC's HazCom program by:

- a. Following the guidelines in Chapters 9.1 and 9.2.
- b. Reporting all safety and health issues to your supervisor for resolution.
- c. Participating in the JSC Safety and Health Action Team (see Chapter 1.6, "Employee Involvement"). Participation allows you to
 - (1) Comment on policy and requirements.
 - (2) Accompany health personnel or management on surveys and inspections.
 - (3) Develop necessary corrective actions.
 - (4) Verify the completion of corrective actions.

9.2.22 Responsibilities for hazard communication

- a. As a **JSC manager** at any level, you are responsible for identifying and acquiring all necessary resources to implement the HazCom program and oversee the program in your organization.
- b. As a **supervisor**, you are responsible for addressing any employee concerns or complaints and ensuring your employees:
 - (1) Complete the training required by 29 CFR 1910.1200 and JSC's hazard communication program.
 - (2) Know the necessary safety information, including hazardous materials inventories and SDSs.
 - (3) Have information on any new hazards through training, instructions, safety alerts, etc,
 - (4) Have reviewed applicable job hazard analyses, job safety analyses, and other safety and health hazard assessments and evaluations annually.
 - (5) Select, use, and care for protective clothing, equipment, and emergency facilities.
 - (6) Select and use monitoring equipment properly.
 - (7) Have access to a copy of this chapter and the SDSs.

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- (8) Tell Center Operations of any hazards that need to be corrected (existing or potential) to make sure handling or use of hazardous materials in JSC facilities is safe.
- c. The **Center Operations Directorate** is responsible for making sure facilities are designed and built to anticipate hazardous conditions from activities using hazardous materials, as requested by management, the Safety and Test Operations Division, or Occupational Health.
- d. **Occupational Health** is responsible for:
- (1) Reviewing guidelines, evaluations, and recommendations for health protection measures to make sure they meet health standards for control of, or exposure to, hazardous materials.
 - (2) Helping JSC organizations implement all the health aspects of the Hazard Communication Standard and JSC's hazard communication program.
 - (3) Maintaining a central repository of SDSs and the hazardous materials inventory.
 - (4) Making HazCom training available to JSC contractor and civil service employees.
- e. The **Safety and Test Operations Division** is responsible for:
- (1) Reviewing guidelines, evaluations, and recommendations for safety protection measures to make sure they meet safety standards for control of, or exposure to, hazardous materials.
 - (2) Helping JSC organizations implement all the safety aspects of the HazCom standard and JSC's hazard communication program.

9.2.23 Laboratory requirements

- a. All JSC laboratories, meeting the definition in 29 CFR 1910.1450, shall follow the requirements in this chapter and Chapter 6.7, "Laboratory Safety and Health,"
- b. Laboratory workers are responsible for demonstrating an understanding of, and the ability to practice, good laboratory techniques, including procedures to decontaminate themselves and the facility in the event of a spill or escape.
- c. Facilities engaged in manufacturing-type operations or in large-scale, multi-personnel activities requiring close coordination of efforts are responsible for following the general requirements of the program found elsewhere in this JPR.

9.2.24 Security-sensitive materials

9.2.24.1 Employees who control any security-sensitive hazardous materials shall:

- a. Contact the JSC Security Office for guidance.
- b. Generate a memorandum of understanding (MOU) outlining how to follow the intent of JSC's HazCom program. Occupational Health and the Safety and Test Operations Division shall review and concur on the MOU.
- c. Consult Occupational Health and the Safety and Test Operations Division to help determine whether specific materials are security sensitive.
- d. Never include drugs or narcotics, controlled substances, nuclear or radioactive substances, or explosives on unclassified lists of hazardous material.
- e. Compile classified lists separately and lock them in files.

Verify correct version before use at [Center Directives Management System](#).

JSC Form JF2420B (Revised April 3, 2012) (MS Word August 28, 2006)

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- f. Restrict the distribution of copies of such lists to the following:
 - (1) Occupational Health
 - (2) Safety and Test Operations Division
 - (3) Security Office
 - (4) Responsible division office
- g. Allow access to such lists by any other person only if authorized by Occupational Health, with the concurrence of the requester's division chief.

9.2.25 Contractors who use hazardous materials on site

9.2.25.1 Contractors working with hazardous materials on site at JSC shall:

- a. Obtain the following information before beginning any work on site:
 - (1) A copy of this chapter.
 - (2) Instructions on accessing JSC's site-wide hazardous materials inventory.
 - (3) Instructions on accessing the NASA/JSC SDS database for hazardous materials at JSC, Sonny Carter Training Facility, and Ellington Field.
- b. Distribute this information to employees according to 29 CFR 1910.1200.
- c. Make sure affected employees see the information in subparagraph a.
- d. Follow the requirements of JSC's HazCom program by working with your NASA technical manager.
- e. Have access to any information and technical help needed from JSC safety and health personnel. Employees who do specific, short-term jobs on site will be given information for pre-start reviews of their safety and health programs and scheduled activities. JSC will support on a case-by-case basis.
- f. Perform the same duties distributors perform for manufacturers and customers if they distribute hazardous materials at JSC.
- g. State their contract safety and health plan and how they will review purchase requests, if they will purchase hazardous materials to be brought on site.
- h. Describe how they will implement HazCom in their safety and health plan. The Safety and Test Operations Division will formally request updates through procurement channels.
- i. Supply a list of all hazardous materials used at JSC to Occupational Health for review when the contract starts, and update and submit the list at least yearly. This list should contain the amount of each chemical or material on hand, the most that would be on hand at one time, and the annual usage of that material. Provide information in a way to support Occupational Health's computer database.
- j. Inform Occupational Health of any hazardous material they need to purchase and use in an on-site facility for the first time.
- k. Supply a copy of the current SDSs for all hazardous materials they bring on site at JSC.

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9.2.26 Using hazardous materials off site

Contractors, using hazardous materials off site shall follow all applicable statutes, codes, or regulations as required.

9.2.27 For more information on hazard communications

- a. *Department of Transportation Emergency Response Guidebook* (latest edition)
- b. NPR 8715.3, "NASA General Safety Program Requirements"
- c. 29 CFR 1910.1200, "Hazard Communication Standard"
- d. 29 CFR 1910.1450, "Occupational Exposure to Hazardous Chemicals in Laboratories"
- e. *The Occupational Environment: Its Evaluation, Control, and Management*; 3rd Edition, American Industrial Hygiene Association, 2011
- f. *Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices (TLVs[®] and BEIs[®])*, American Conference of Governmental Industrial Hygienists, latest edition

9.2.28 Safety and health records for hazard communication

Center-level –Occupational Health shall keep the hazardous material inventory records.

NOTE: See Appendix F, Attachment 1.1A for details on records required by this chapter.