

# INTRODUCTION TO AUTOMOTIVE TECHNOLOGY

---

## UNIT 2: SAFETY

### LESSON 4: FEDERAL AND STATE HAZARDOUS MATERIAL REGULATIONS

- I. Occupational Safety and Health Administration (OSHA) regulations
  - A. OSHA is a federal organization that sets and enforces work environment standards to protect the health and safety of the individual worker. Any employer or institution that does not adhere to OSHA standards is subject to prosecution.
    1. If employees provide their own eye and face protective equipment, OSHA requires that the employer make sure the equipment meets specific safety standards.
    2. OSHA requires the employer to provide a ventilation system, masks, and any other such devices needed to provide reasonable protection against harmful dusts, fogs, fumes, mists, gases, smokes, sprays, and vapors.
    3. OSHA requires that flammable liquids like gasoline and solvents that are packaged or kept in small containers be stored in an approved metal cabinet in quantities of less than 60 gal.  
  
**NOTE:** The metal cabinets must be approved by the Underwriters Laboratories Inc. (UL).
    4. OSHA requires that potentially hazardous chemicals stored on site be clearly labeled. Safety training for employees should address the correct procedures for chemical handling, storage, and disposal.
    5. OSHA requires that employers provide adequate ear protection for all workers exposed to noise levels deemed harmful.
  - B. The Hazardous Communication Standard or Right-to-Know law informs employees about the hazardous substances that are available in their shop.
    1. Requirements of the Right-to-Know law
      - a. A specific person or group is responsible for the operation of the company's Right-to-Know program.



- b. All hazardous substances and harmful physical agents must be identified.
  - c. A written program describes training activities, chemical identities, and waste disposal.
  - d. All containers of hazardous substance must be labeled with the necessary health and safety information.
  - e. Employers must obtain written information on each hazardous substance and provide them to employees in the form of material safety data sheets (MSDS).
  - f. All employees must be trained in the details of the Right-to-Know requirements.
- C. OSHA uses certain basic characteristics to determine which materials are included on its hazardous substance list.
- 1. A hazardous material is any substance that could cause injury or death to people or could damage and pollute land, air, or water.
  - 2. To be considered hazardous a substance must be either toxic, flammable, corrosive, reactive, or come into contact with the skin.
    - a. “Toxic” is the term used to describe a material that can cause illness or death after being inhaled or coming into contact with the skin. OSHA and the Environmental Protection Agency (EPA) have lists that include hundreds of different toxic chemicals.
    - b. “Flammable” is used for an ignitable substance that can easily catch fire or any material that has a flash point below 200°F.
    - c. “Corrosive” is used for a substance strong enough to dissolve metal, burn skin, or cause eye damage. Acids and bases are examples of corrosive materials.
    - d. “Reactive” is used for a material that can become unstable, burn, explode, or give off toxic vapors if mixed with air, water, heat, or other materials.

## INTRODUCTION TO AUTOMOTIVE TECHNOLOGY

---

- D. Employee training is required.
  - 1. Employers are required to train the following people.
    - a. Workers who are routinely exposed to hazardous chemicals or hazardous waste.
    - b. Workers who handle packages containing hazardous materials.
    - c. Anyone that could be exposed to hazardous materials in a foreseeable emergency or could be involved if an accident occurs.
    - d. New employees that meet the above examples must be trained before they begin work where they could be exposed to hazardous materials.
    - e. Office workers that only encounter hazardous chemicals in isolated cases do not require training.
  - 2. The following must be included in the training.
    - a. Employees must be trained to recognize hazardous materials and how to gather information about those hazardous materials.
    - b. Employees must be trained in the basic ways to protect themselves from harmful exposure.
    - c. Employees must be trained in the proper use of levels and MSDS materials.
    - d. Employees must be trained in what to do in an emergency and how to use equipment.
    - e. Employers must educate employees on the details of the Right-to-Know program.
  - 3. Federal regulations do not include annual Right-to-Know training, but many states now require safety training be repeated on an annual basis.
- E. Employers have certain responsibilities.
  - 1. There must be at least one person appointed to administer the Right-to-Know program.

2. Hazardous materials in the workplace must be identified and listed.
  3. An MSDS must be obtained and kept for each hazardous chemical on site.
  4. A written plan must be developed that outlines the requirements of the Right-to-Know program.
  5. Employees must be trained to understand the physical and health hazards of the chemicals.
  6. The information on container labels must be explained and maintained.
  7. Workers must be shown how to protect themselves from chemical hazards.
  8. There must be instructions on what to do in an emergency and how to use protective equipment.
- F. Employees have certain responsibilities.
1. They must know where the MSDSs are kept.
  2. They must know how to read labels and MSDS information and how to follow the manufacturer's instructions and warnings.
  3. They must know how to obtain information and ask questions.
  4. They must know the proper procedures for dealing with hazardous materials.
  5. They must know the proper procedures for dealing with an emergency that involves hazardous materials.
- G. MSDS requirements include the following:
1. Per OSHA requirements, chemical manufacturers and material importers must obtain or develop an MSDS for each hazardous material they produce or import. A sample MSDS appears after the next page.
  2. Employers must have an MSDS in the workplace for each hazardous material they use.
  3. Each MSDS must be in English.

## INTRODUCTION TO AUTOMOTIVE TECHNOLOGY

---

**NOTE:** The employer may maintain copies in other languages.



4. Chemical manufacturers and importers can use any form for a MSDS as long as it is in compliance with OSHA standards and contains the specific following information.
  - a. The name, common name, and common name of any chemicals used in the mix
  - b. The physical and chemical characteristics
  - c. Physical hazards including the potential for fire, explosion, and reactivity
  - d. Health hazards including the signs and symptoms of exposure and any medical conditions that are generally recognized as being aggravated by exposure
  - e. Primary routes of entry on the body, such as inhalation and skin absorption
  - f. The OSHA-permissible exposure limit, the American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit, and any other exposure limits that are used or recommended
  - g. Whether or not the chemical is listed by OSHA and the National Toxicology Program (NTP) annual report on carcinogens or is considered to be a potential carcinogen in the International Agency for Research on Cancer (IARC) monographs
  - h. Any applicable precautions for safe handling and use that are known
  - i. Any applicable control measures that are known
  - j. Emergency and first aid procedures
  - k. Date of preparation of the MSDS or the date of the last change to the MSDS
  - l. Name, address, and telephone number of the chemical manufacturer, importer, or employer that prepared the MSDS
5. Each manufacturer will have specific information about how to read an MSDS.

**MSDS 19-3**  
January 1, 2001

## DuPont Performance Coatings MATERIAL SAFETY DATA SHEET CHROMASYSTEM® BINDERS AND BASEMAKERS

<b>***** SECTION 1 - Product and Company Identification *****</b>				BUTYL ACETATE	123-86-4	8.0	A 200.0 ppm 15 min STEL A 150.0 ppm O 150.0 ppm
Manufacturer:	E.I. DuPont de Nemours & Co. DuPont Performance Coatings Wilmington, DE, 19898						
Telephone:	Product Information:	(800) 441-7515	CELLULOSE ACETATE BUTYRATE	9004-36-8	None		A None O None
	Medical Emergency:	(800) 441-3637					
	Transportation Emergency:	(800) 424-9300 (CHEMTREC)	DIISOBUTYL KETONE	108-83-8	1.7		A 25.0 ppm O 50.0 ppm
Product:	<b>CHROMASYSTEM® BINDERS &amp; BASEMAKERS</b>						
DOT Shipping Name:	See DOT addendum.			ETHYL ACETATE	141-78-6	76.0	A 400.0 ppm O 400.0 ppm
Hazardous Materials Information:	See Section 10.						

**\*\*\*\*\* SECTION 2 - Composition, Information on Ingredients \*\*\*\*\***

INGREDIENTS	CAS #	VAPOR PRESSURE	EXPOSURE LIMITS				
ACETIC ACID ESTER	90438-79-2	None	O None A None	ETHYLBENZENE	100-41-4	7.0	A 125.0 ppm 15 min STEL A 100.0 ppm O 100.0 ppm D 25.0 ppm 8 & 12 hour TWA
ACETIC ANHYDRIDE	108-24-7	1.0 @ 36.0 Deg C	A 5.0 ppm  CEIL O 5.0 ppm CEIL	HEXYL ACETATE ISOMERS	88230-35-7	0.7	O None A 50.0 ppm hexyl acetate
ACETONE	67-64-1	180.0 @ 68.0 Deg F	A 750.0 ppm  15 min STEL A 500.0 ppm O 1000.0 ppm D 500.0 ppm 8 & 12 hour TWA	ISOBUTYL ACETATE	110-19-0	12.5	A 150.0 ppm O 150.0 ppm
ACRYLIC POLYMER-A	Not Available	None	A None O None	ISOPROPYL ALCOHOL	67-63-0	33.0	A 500.0 ppm 15 min STEL A 400.0 ppm O 400.0 ppm D 400.0 ppm 8 & 12 hour TWA
ACRYLIC POLYMER-B	25133-97-5	None	A None O None	KETONE SOLVENT	71808-49-6	5.8 @ 100.0 Deg C	A None  O None
ACRYLIC POLYMER-C	96591-17-2	None	A None O None	MEDIUM MINERAL SPIRITS	64742-88-7	7.5 @ 37.8 Deg C	D 100.0 ppm  A None O None
ACRYLIC POLYMER-D	124993-76-6	None	A None O None	METHYL AMYL KETONE	110-43-0	2.2	A 50.0 ppm O 100.0 ppm
AROMATIC HYDROCARBON	64742-95-6	10.0 @ 25.0 Deg C	D 50.0 ppm  A None O None	METHYL ETHYL KETONE	78-93-3	71.0 @ 0.0	A 300.0 ppm 15 min STEL

Reprinted with permission from  
DuPont Automotive Finishes

**MSDS 19-3**  
January 1, 2001

# INTRODUCTION TO AUTOMOTIVE TECHNOLOGY

---

## II. EPA regulations

- A. The EPA is a federal agency that writes and enforces regulations on hazardous waste and is responsible for how the health of the population is affected by the environment.
- B. Federal laws define three categories of hazardous waste generators.
  - 1. A Conditionally Exempt Small Quantity Generator generates 100 kg or less of hazardous waste per month and never stores more than 1,000 kg at the business.
  - 2. A Small Quantity Generator generates between 100 kg and 1,000 kg of hazardous waste per month. The amount of hazardous waste stored on site must never exceeds 6,000 kg.  
  
**NOTE:** The typical shop is classified by the EPA as a Small Quantity Generator.
  - 3. A Large Quantity Generator generates 1,000 kg or more per month of hazardous waste. This type of generator does not have a hazardous waste storage limit but cannot store waste on site for more than 90 days.
- C. All categories of generators are subject to the following requirements.
  - 1. A generator must determine which materials are hazardous.
  - 2. A generator must obtain an EPA ID number.
  - 3. A generator must prepare and store hazardous waste as required by law.
  - 4. A generator must ship wastes for treatment and disposal only to companies with proper EPA ID numbers.
  - 5. A generator must follow the proper hazardous waste storage rules for tanks and drums.
    - a. Drums must be marked with the date the waste was first placed in the drum.
    - b. The correct labels must be used.
    - c. There must be a secure storage area to prevent unauthorized access.





- d. Outdoor storage must be shaded from sunlight if the wastes are ignitable.
  - e. The floor in the outdoor storage area must be curbed and impermeable to catch and contain leaks of the waste.
6. A generator must keep manifests for at least 3 years. Exception reports are filed if a waste shipment is lost.
7. The facility must be operated to minimize accidents and be equipped with internal and external communication equipment. Local authorities, fire, police, and emergency medical must be familiar with the layout, entrance routes, access routes, and the list of wastes at the facility and related locations.
- NOTE:** Any refusal by the local authorities to respond should be documented.
8. A generator must inspect waste containers on a weekly basis. Containers must be kept closed between use. If the facility is ever closed, all waste must be removed.
- D. Additional requirements for category 2 and 3 generators are as follows:
- 1. An emergency coordinator must be designated for the site. This person is on call 24 hours a day to respond to any emergency.
  - 2. The name and phone number of the emergency coordinator, the location of the fire extinguishers, the location of the spill control equipment, and the fire department phone number must be posted by the telephone.
  - 3. The generator must ensure and document that employees have been trained in emergency operations and communications systems.
  - 4. The emergency coordinator must respond to any emergency and follow the emergency response plan.
- E. Hazardous wastes must be stored properly.
- 1. When wastes are generated, a label is created with the start date, facility address, EPA ID number, the words "Hazardous Waste," waste information, and shipping information.

## INTRODUCTION TO AUTOMOTIVE TECHNOLOGY

---

2. A warning sticker may also be necessary. Some wastes have more than one hazard and require a warning label for each hazard.
  3. Container management requires that a log must be kept to record weekly inspections of drums during storage. Drum inspections require the date and initials of the inspector. See Section II, C, 5 for other requirements.
- F. EPA regulations related to the storage of hazardous wastes include the following:
1. The different types of hazardous wastes cannot be mixed.
  2. Storage containers must be in sound condition and have the proper design and characteristics for the type of material.
  3. Containers must be clearly marked and stored away from the shop area. The EPA and Department of Transportation (DOT) require specific labels to indicate various types of wastes.
- G. EPA regulations related to the handling of hazardous wastes include the following:
1. Employees must be trained in the proper use and disposal of hazardous wastes.
  2. Signs and charts identifying and describing the hazardous materials must be displayed in the shop.
    - a. Emergency procedures for dealing with hazardous waste accidents must be displayed in the shop.
    - b. The phone numbers of the emergency coordinator, fire department, police, health center, and the national response center must be posted by the telephone.
  3. The shop area must be uncluttered and exits easily accessible. The local fire marshal determines if the shop is meeting these requirements.
  4. The shop operator must have on file precise information on the chemicals contained in each product in the shop. The operator should also have on file first aid procedures relating to exposure to these chemicals.



- H. EPA regulations related to the disposal of hazardous wastes include the following:
1. Hazardous wastes must be collected by an approved waste hauler.
  2. A shop representative must complete a waste manifest each time a waste hauler picks up hazardous material. The hauler cannot accept waste without the correct forms.  
  
**NOTE:** An exception to this rule involves the use of solvents that will be recycled by the waste hauler. In this case, the paperwork is handled by the hauler.
  3. The shop must obtain a twelve-digit code number from the EPA. This number registers the shop as a Small Quantity Generator. A waste hauler must have this code.
  4. Each type of waste must be in a suitable package or container and identified with a code name as specified by the DOT.
  5. Failure to observe EPA regulations results in criminal liability to the shop or waste hauler.
- I. Chemicals or products that are designated as hazardous waste can change. The following are two ways a material is judged "hazardous" and subject to EPA regulations.
1. The EPA has a published list of specific chemicals deemed to be hazardous to health and the environment.
  2. If an operator believes a material is flammable or corrosive, will react chemically with other materials, or will release hazardous materials, the material can be deemed hazardous.
- J. The following are ways in which a shop can reduce the production of hazardous waste and the cost of disposing of it.
1. Encourage the conservative use of solvents to reduce waste disposal costs as well as the replacement costs of solvent.
  2. Use heaters that burn oil, which saves on heating bills as well as waste disposal costs.
  3. Ship the hazardous waste directly to a recycling plant that will pick the waste up at no charge and usually not require a waste manifest.