Section 5

MSDS's – Material Safety Data Sheets

Purpose

To use Material Safety Data Sheets (MSDSs) to understand the specific hazards of products you work with.

To fill in the gaps in MSDSs by using New Jersey Fact Sheets.

Section 5

What you will find in this section...

Task 1

- **Answer questions on next two pages.**
- **Develop a list of major health and safety concerns.**

Your group is the health and safety committee at ComfoSeat. Some of the local union's members who work in the warehouse have expressed a concern about some of the stored chemicals, especially the waste drums. Here's the situation:

> Several drums of unused products and wastes are stored close together. Some containers are corroded and look like they are leaking.
>
> The chemicals stored are **acetone**, a solvent, and **sodium hydroxide** (caustic soda), a strong alkali. The workers in the storage area can smell some chemicals which makes them suspect that they are being exposed to chemicals in air. They think that at least one of the drums of acetone is leaking.

Your task is to develop a list of major health and safety concerns for the workers in the warehouse. Answer the questions on the next two pages to help you with your list of concerns. Use the MSDS for acetone, the product that seems to be leaking. Also use the fact sheets which follow to help decipher the MSDS and decide if you have major concerns about this storage area.

Task 1
continued

- **Answer the 9 questions below.**
- **Develop a list of major health and safety concerns.**

1. According to the following MSDS for acetone, how can the product **get into** your body? (See the "Health Hazards" section on the MSDS.)

2. What **health problems** does this MSDS tell you about?

   A. Short term (Acute)

   B. Long term (Chronic)

3. According to this MSDS, **can this product cause cancer**? (Look for the word "Carcinogenic" on the MSDS. This means cancer-causing. If the MSDS has "Y" or "Yes," the product causes cancer.)

Task 1

continued

- **Answer the 9 questions below.**
- **Develop a list of major health and safety concerns.**

4. Can this product catch on fire or explode? (Tip: See fact sheet called “Will It Burn or Explode” in previous section.) Why do you think there is/is not a fire hazard?

5. According to this MSDS, what personal protective equipment (ppe) should the warehouse workers be using, if any? (Look at “Personal Protection” section and “Spill and Leak” section.)

6. According to this MSDS, is there any problem in storing acetone next to caustic soda, a strong alkali (base)? (See “Reactivity” or “Storage" section on MSDS.)

7. What is your list of health and safety concerns for the warehouse workers?

Task 1
continued

- **Answer the 9 questions below.**
- **Develop a list of major health and safety concerns.**

8. What problems did you have in finding information on this MSDS?

9. What problems do you think you would have in using an MSDS during an emergency?

Page Numbers
To be added to Fact Sheets

5-13 5-14 5-21 5-22 5-23 5-24 5-25

MSDS for Acetone

Canadian Centre for Occupational Health and Safety

*** IDENTIFICATION ***

RECORD NUMBER : 334313
LANGUAGE : ENGLISH
PRODUCT NAME(S) : ACETONE
PRODUCT IDENTIFICATION DATA : VAN WATERS & ROGERS MSDS NO.: P1018
DATE OF MSDS : 1990-08-17

*** SUPPLIER INFORMATION ***

SUPPLIER/DISTRIBUTOR : Van Waters & Rogers Ltd (Canada)
ADDRESS : 9800 Van Horne Way
Richmond British Columbia
Canada V6X 1W5
EMERGENCY TELEPHONE NO.(S) : 800-424-9300 (CHEMTREC)

*** MATERIAL SAFETY DATA ***

P1018.3 ACETONE

VAN WATERS & ROGERS LTD. 9800 VAN HORNE WAY RICHMOND, B.C. V6X 1W5

WHMIS CODES: B.2 D.2B

----------EMERGENCY ASSISTANCE----------

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC
(800) 424-9300.

----------FOR PRODUCT AND SALES INFORMATION----------

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

----------PRODUCT IDENTIFICATION----------

PRODUCT NAME: ACETONE CAS NO.:67-64-1
COMMON NAMES/SYNONYMS: ACETONE, VW&R CODE: P1018
2-PROPANONE
FORMULA: C3 H6 O DATE ISSUED: 08/90
HAZARD RATING (NFPA 704) SUPERCEDES: 08/87
HEALTH: 1 HAZARD RATING SCALE:
FIRE: 3 0=MINIMAL 3=SERIOUS
REACTIVITY: 0 1=SLIGHT 4=SEVERE
SPECIAL: NONE 2=MODERATE

----------HAZARDOUS INGREDIENTS----------

MSDS for Acetone (continued)

		EXPOSURE LIMITS, PPM			
		OSHA	ACGIH	OTHER	
COMPONENT	%	PEL	TLV	LIMIT	HAZARD
ACETONE	>99	750	750	1000 (ACGIH STEL)	FLAMMABLE;IRRITANT

----------PHYSICAL/CHEMICAL CHARACTERISTICS----------

BOILING POINT, DEG F: 133
MELTING POINT, DEG F: -142
SPECIFIC GRAVITY (WATER=1): 0.79
APPEARANCE AND ODOR: CLEAR, COLORLESS LIQUID; SWEET ODOR
VAPOR PRESSURE, MM HG/20 DEG C:184
VAPOR DENSITY (AIR=1):2.0
WATER SOLUBILITY, %:100
EVAPORATION RATE (BUTYL ACETATE=1):14

----------FIRST AID MEASURES----------

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

IF SWALLOWED: IF CONSCIOUS, IMMEDIATELY INDUCE VOMITING BY GIVING 2 GLASSES OF WATER AND STICKING A FINGER DOWN THE THROAT. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING TO AN UNCONSCIOUS OR CONVULSING PERSON.

NOTES TO PHYSICIAN: THE DANGER OF ASPIRATION MUST BE WEIGHED AGAINST TOXICITY WHEN CONSIDERING EMPTYING THE STOMACH. STOMACH CONTENTS SHOULD BE EMPTIED QUICKLY IN A MANNER WHICH AVOIDS THE VOMITUS ENTERING THE LUNGS.

----------HEALTH HAZARD INFORMATION----------

PRIMARY ROUTES OF EXPOSURE: INHALATION, SKIN OR EYE CONTACT.

SIGNS AND SYMPTOMS OF EXPOSURE
INHALATION: PROLONGED OR REPEATED EXPOSURE OR BREATHING VERY HIGH CONCENTRATIONS MAY CAUSE HEADACHES, NAUSEA, VOMITING, DIZZINESS, OTHER CENTRAL NERVOUS SYSTEM EFFECTS, CONVULSIONS, AND IN EXTREME CASES, UNCONSCIOUSNESS AND DEATH.

EYE CONTACT: VAPORS WILL IRRITATE THE EYES. LIQUID AND MISTS WILL IRRITATE AND MAY BURN THE EYES.

SKIN CONTACT: BRIEF CONTACT MAY DRY THE SKIN. PROLONGED OR REPEATED CONTACT MAY IRRITATE THE SKIN, CAUSING DERMATITIS.

SWALLOWED: SWALLOWING LARGE QUANTITIES CAUSES HEADACHES, NAUSEA, VOMITING, AND PERHAPS UNCONSCIOUSNESS. CAN ALSO CAUSE LIVER AND KIDNEY

INJURY.

CHRONIC EFFECTS OF EXPOSURE: NO SPECIFIC INFORMATION AVAILABLE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: PREEXISTING EYE OR SKIN DISORDERS MAY BE AGGRAVATED BY ACETONE EXPOSURE. ALSO, USE OF ALCOHOLIC BEVERAGES ENHANCES TOXIC EFFECTS.

----------TOXICITY DATA----------

ORAL: RAT LD50 = 9750 MG/KG

DERMAL: RABBIT LD50 = 20 G/KG

INHALATION: RAT LC50 = 16,000 PPM/4 HR

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.

OTHER DATA: INHALATION HUMAN TCLO = 500 PPM (EYE)
DEVELOPMENT OF CATARACTS HAS BEEN REPORTED IN LABORATORY ANIMALS AFTER PROLONGED REPEATED SKIN EXPOSURE.

----------PERSONAL PROTECTION----------

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAINTAINING EMISSIONS AT THE POINT OF USE BELOW THE PEL.

RESPIRATORY PROTECTION: IF USE CONDITIONS GENERATE VAPORS OR MISTS, WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THOSE EMISSION LEVELS. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS/MISTS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, IMPERVIOUS GLOVES, AND RUBBER APRON.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

----------FIRE AND EXPLOSION INFORMATION----------

FLASH POINT, DEG F: 0 FLAMMABLE LIMITS IN AIR, %
METHOD USED: TCC LOWER: 2 UPPER: 13
EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL, CO2, OR ALCOHOL FOAM.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-

CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: ACETONE IS EXTREMELY FLAMMMABLE. EXTINGUISH ALL NEARBY SOURCES OF IGNITION. AVOID ACCUMULATION OF WATER OR ACETONE VAPORS BECAUSE AQUEOUS SOLUTIONS CONTAINING MORE THAN 2.5% ACETONE ARE FLAMMABLE. VAPORS FORMED FROM THIS PRODUCT ARE HEAVIER THAN AIR AND MAY TRAVEL ALONG THE SURFACE TO A DISTANT SOURCE OF IGNITION AND FLASHBACK. EXPLOSIVE VAPOR-AIR MIXTURES MAY BE FORMED ABOVE THE FLASH POINT OR BETWEEN THE LOWER AND UPPER FLAMMABLE LIMITS.

----------HAZARDOUS REACTIVITY----------

STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: HEAT, SPARKS, AND OPEN FLAMES.

MATERIALS TO AVOID: ACIDS, OXIDIZING MATERIALS, POTASSIUM T-BUTOXIDE, ALKALIS, AMINES, ALKANOLAMINES, AMMONIA, ALDEHYDES, AND CHLORINATED COMPOUNDS.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE, CARBON DIOXIDE, AND UNIDENTIFIED ORGANIC COMPOUNDS IN BLACK SMOKE.

----------SPILL, LEAK, AND DISPOSAL PROCEDURES----------

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, IMPERVIOUS GLOVES, RUBBER APRON, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. EXTINGUISH ALL IGNITION SOURCES AND ENSURE THAT ALL HANDLING EQUIPMENT IS ELECTRICALLY GROUNDED. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIALS AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS; OR ABSORB WITH NON-COMBUSTIBLE SORBENT MATERIAL, PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL.
COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.
NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

----------SPECIAL PRECAUTIONS----------

HANDLING AND STORAGE PRECAUTIONS: KEEP AWAY FROM HEAT, SPARKS, AND FLAMES. STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. VENT CONTAINER FREQUENTLY, AND MORE OFTEN IN WARM WEATHER, TO RELIEVE PRESSURE. ELECTRICALLY GROUND ALL EQUIPMENT WHEN HANDLING THIS PRODUCT AND USE ONLY NON-SPARKING TOOLS. KEEP CONTAINER

TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

----------PREPARATION INFORMATION----------

CONTACT MSDS CO-ORDINATOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (408)-435-8700

----------NOTICE----------

VAN WATERS & ROGERS LTD. EXPRESSLY DISCLAIMS ALL EXPRESSED OR IMPLIED WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE PRODUCT PROVIDED.

----------REVISION----------

08/90: ADDED NOTES TO PHYSICIAN, UNUSUAL FIRE, OTHER DATA. REVISED COMPONENTS PEL, SPILL, LEAK AND DISPOSAL PROCEDURES SECTION AND PROTECTIVE CLOTHING.

========== END OF MSDS ==========

Fact Sheet #1

MSDSs: The Four Most Important Sections

An MSDS is a chemical fact sheet that tells you what a chemical can do to you and how to protect yourself. These fact sheets are usually 2-10 pages long. Sometimes they are very technical and hard to understand.

The most important sections of the MSDS are:

1. **Health Hazard Data** — How can it make you sick?
2. **Fire and Explosion Data** — Can it catch on fire or explode?
3. **Control Measures or Special Protection** — How can you keep it out of the air and out of your body?
4. **Precautions** — What are safer ways to work with this product?

These four sections will tell you what the chemical can do to you and how you can protect yourself. Remember that your employer has to train you on how to read and use all sections of the MSDS.

Sometimes MSDSs do not have all the information you need. Sometimes the information is incomplete or wrong. But, they can be very useful. **Start with the MSDS to find out what chemicals are in the products you work with**. Then, you can find information about those chemicals from other sources, too.

More OSHA requirements for MSDSs:

- **No blank spaces** are allowed.
- Each MSDS must be **dated**. If the date is more than three years old, ask for any updates that may have been issued.

Fact Sheet #2

Material Safety Data Sheet
May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List)

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name	Emergency Telephone Number
Address (Number, Street, City, State and ZIP code)	Telephone Number for Information
	Date Prepared
	Signature of Preparer (optional)

Section II – Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))

OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)

Section III – Physical/Chemical Characteristics

Boiling Point	Specific Gravity (H_2O = 1)
Vapor Pressure (mm Hg)	Melting Point
Vapor Density (AIR=1)	Evaporation Rate (Butyl Acetate =1)
Solubility in Water	
Appearance and Odor	

Section IV – Fire and Explosion Hazard Data

Flash Point (Method Used)		
Flammable Limits	LEL	UEL
Extinguishing Media		
Special Fire Fighting Procedures		
Unusual Fire and Explosion Hazards		

(Reproduce locally)

OSHA 174, Sept. 1985

Fact Sheet #2, continued

Section V – Reactivity Data			
Stability	Unstable	Conditions to Avoid	
	Stable		
Incompatibility (Materials to Avoid)			
Hazardous Decomposition or Byproducts			
Hazardous Polymerization	May Occur	Conditions to Avoid	
	Will Not Occur		

Section VI – Health Hazard Data			
Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
Health Hazards (Acute and Chronic)			
Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
Signs and Symptoms of Exposure			
Medical Conditions Generally Aggravated by Exposure			
Emergency and First Aid Procedures			

Section VII – Precautions for Safe Handling and Use
Steps to Be Taken in Case Material Is Released or Spilled
Waste Disposal Method
Precautions to Be Taken in Handling and Storing
Other Precautions

Section VIII – Control Measures		
Respiratory Protection (Specify Type)		
Ventilation	Local Exhaust	Special
	Mechanical (General)	Other
Protective Gloves		Eye Protection
Other Protective Clothing or Equipment		
Work/Hygienic Practices		

U.S. Government Printing Office: 1987–181-504/64362

Fact Sheet #3

MSDSs and Your Rights

In Your Work Area and On Your Shift

OSHA's Hazard Communication Standard requires your employer to keep an MSDS for each product you work with in a place that is "accessible" to you on your shift. Storing MSDSs in the nurse's office which is closed on the midnight shift does not comply with the law! The employer has to train you about the chemicals you work with. This training should include how to read an MSDS and where to find them in your workplace.

Updates

The manufacturer of the product writes the MSDS. They have to look up any studies that have been done on the chemicals. They have to update the MSDS if scientists discover new hazards AND distribute the updated MSDS to buyers of this product.

Contact the Manufacturer

If you need more information, the phone number and address of the person who wrote the data sheet has to be on the MSDS.

Most Important:

1. Your employer must let you see an MSDS during the shift that you ask for it.

2. Your employer must give you and/or a union representative a copy of the MSDS if you ask for it. Make your request in writing. Your employer has 15 working days to respond. (See Source #2.)

***Sources**: (1) OSHA's Hazard Communication Standard, 29 CFR 1910.1200*
(2) OSHA's Standard on Access to Medical and Exposure Records, 29 CFR 1910.20

Fact Sheet #4

The Problems with MSDS's

MSDS's are extremely important to give you information you need. But beware! These sheets have many problems. Try checking the information on an MSDS with another resource to make sure it is complete.

Here's what the American Lung Association thinks about MSDS's:

> "Unfortunately, information presented on an MSDS may be incomplete or inaccurate. This is particularly true for information on health effects that workers may experience from low-level chemical exposure over a long period of time."

OSHA Does Not Review or Approve the Information on MSDS's

OSHA says that certain information has to be on an MSDS. (See OSHA's suggested form in Fact Sheet #2 for details.) But they don't check each MSDS to make sure the information is correct.

Here are some common problems:

- **It's hard to find information.** Every manufacturer has their own format for MSDSs. For instance, you have to look in a different place to find "health effects" on each one.

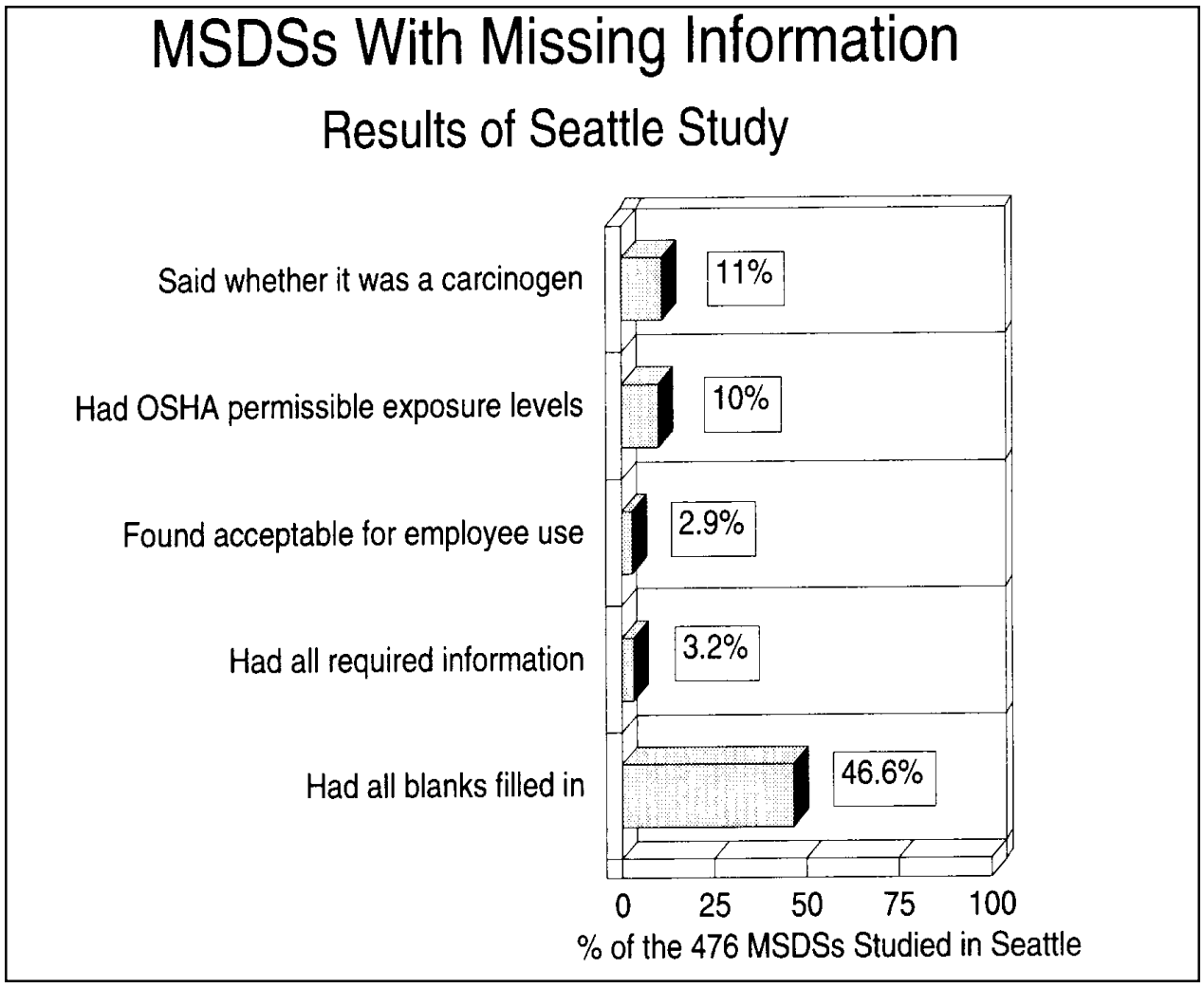
- **The information can be incomplete, misleading and, sometimes, just wrong.** It's all up to the chemical manufacturer to get it right. Conflict of interest, maybe?

Fact Sheet #4, continued

■ **Full of technical jargon.** An MSDS looks like alphabet soup with all those PELs and TLVs, LELs and LD_{50}'s. They're hard to understand! That's why training on MSDSs is essential.

The Seattle Area Hospital Council conducted a study on 476 MSDS's to see how accurate they were. Here's what they found:

Only 46.6% of the 476 MSDSs reviewed had all the blanks filled in, and only 3.2% had all the required elements present!



Source: *Industrial Hygiene News Report 29, November 1986 (Lake Marcos, CA, Fluornoy Publisher.)*

Task 2

- **Use the New Jersey Fact Sheet to find out more about acetone.**

Now look at the New Jersey Hazardous Substance Fact Sheet for acetone (at the end of the section), especially the summary on the front page and the Health Effects section on the second page.

1. What new information did you find about the short and long-term health effects of acetone from the New Jersey Fact Sheet?

2. Do you find the New Jersey Fact Sheets easier to read than MSDSs or about the same? Why?

Fact Sheet #5

Other Sources of Information

New Jersey Hazardous Substance Fact Sheets.

MSDSs are a good tool, but limited. Many MSDSs are very confusing to read or are missing information. It is **ALWAYS a good idea to check another source for information.** The New Jersey Department of Health has developed detailed fact sheets on more than 1000 different chemicals.

New Jersey Hazardous Substance Fact Sheets are very useful because:

1. **They are written in everyday language. There is also a glossary of technical terms and definitions at the back of every fact sheet.**
2. **A brief summary of the most important information is at the front of every fact sheet.**
3. **The Health Effects information is more complete and clearer than many MSDSs.**

How To Get Fact Sheets

- Get the name of the chemical(s) you are interested in from the "Hazardous Ingredients" section of the product MSDS. You have to know the chemical, such as 1,1,1-trichloroethane, not the brand name, "Safety Solve."

- Contact the New Jersey Department of Health at (609) 984-2202. You can get up to 10 free fact sheets from them. A complete set of fact sheets can be purchased for about $300, or visit their website at **www.state.nj.us/health/eoh/rtkweb/**.

Fact Sheet #5, continued

➦ New Jersey Fact Sheets are also available in English or Spanish on RTKNet at **http://www.state.nj.us/health/eoh/rtkweb/rtkhsfs.htm**.

➦ The UAW Health and Safety Department also has a complete set of New Jersey Fact Sheets and other resource materials. Call (313) 926-5563 or visit the UAW's website at **www.uaw.org**, health and safety section, under the chemical information icon.

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Don't be shy about contacting other resources in your area:

- Your UAW Regional Office, or other local unions, especially if their members do similar work.
- Local COSH groups.
- Government agencies like the National Institute for Occupational Safety and Health (NIOSH).
- Poison Control Centers.
- Local Health Departments.
- Your state's chapter of the American Lung Association -- some chapters have people trained in occupational health.

New Jersey Department of Health

HAZARDOUS SUBSTANCE FACT SHEET

Common Name: **ACETONE**

CAS Number: 67-64-1
DOT Number: UN 1090

RTK Substance number: 0006
Date: September 1985 Revision: May 1992

HAZARD SUMMARY

* **Acetone** can affect you when breathed in and by passing through your skin.
* Exposure to high concentrations can cause you to become dizzy, lightheaded, and to pass out.
* Contact can irritate the skin. Repeated exposure can cause dryness.
* Exposure can irritate the eyes, nose and throat.
* **Acetone** is a FLAMMABLE LIQUID and a FIRE HAZARD.

IDENTIFICATION

Acetone is a colorless liquid with a sweet odor. It is used as a solvent in nail polish remover and to make other chemicals.

REASON FOR CITATION

* **Acetone** is on the Hazardous Substance List because it is regulated by OSHA and cited by ACGIH, NIOSH, NFPA, DOT and EPA.
* This chemical is on the Special Health Hazard Substance List because it is **FLAMMABLE**.
* Definitions are provided on page 5.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

* Exposure to hazardous substances should be routinely evaluated. This may include collecting air samples. Under OSHA 1910.20, you have a legal right to obtain copies of sampling results from your employer. If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.
* ODOR THRESHOLD = 62 ppm.
* The odor threshold only serves as a warning of exposure. Not smelling it does not mean you are not being exposed.

WORKPLACE EXPOSURE LIMITS

OSHA: The legal airborne permissible exposure limit (PEL) is **750 ppm** averaged over an 8-hour workshift and **1,000 ppm** not to be exceeded during any 15 minute work period. (Final Rule, January 1989).

ACGIH: The recommended airborne exposure limit is **750 ppm** averaged over an 8-hour workshift and **1,000 ppm** as a STEL (short term exposure limit).

NIOSH: The recommended airborne exposure limit is **250 ppm** averaged over a 10-hour workshift.

* The above exposure limits are for air levels only. When skin contact also occurs, you may be overexposed, even though air levels are less than the limits listed above.

WAYS OF REDUCING EXPOSURE

* Where possible, enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
* Wear protective work clothing.
* Wash thoroughly immediately after exposure to **Acetone** and at the end of the workshift.
* Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of **Acetone** to potentially exposed workers.

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to Acetone:

* Contact can irritate the skin.
* Exposure can irritate the eyes, nose and throat.
* High concentrations can cause you to become dizzy, lightheaded, and to pass out.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to Acetone and can last for months or years:

Cancer Hazard

* According to the information presently available to the New Jersey Department of Health, Acetone has not been tested for its ability to cause cancer in animals.

Reproductive Hazard

* According to the information presently available to the New Jersey Department of Health, Acetone has not been tested for its ability to affect reproduction.

Other Long-Term Effects

* Repeated skin contact with the liquid can cause dryness and cracking of the skin.
* Long-term exposure can cause chronic nose and throat irritation.
* This chemical has not been adequately evaluated to determine whether brain or nerve damage could occur with repeated exposure. However, many solvents and other petroleum-based chemicals have been shown to cause such damage. Effects may include reduced memory and concentration, personality changes (withdrawal, irritability), fatigue, sleep disturbances, reduced coordination, and/or effects on nerves supplying internal organs (autonomic nerves) and/or nerves to the arms and legs (weakness, "pins and needles").

MEDICAL

Medical Testing

If symptoms develop or overexposure is suspected, the following may be useful:

* Acetone can be measured in the blood, urine, and expired air, and has been used as an index of exposure.
* Evaluate for brain effects such as changes in memory, concentration, sleeping patterns and mood (especially irritability and social withdrawal), as well as headaches and fatigue. Consider evaluations of the cerebellar, autonomic and peripheral nervous systems. Positive and borderline individuals should be referred for neuropsychological testing.

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under OSHA 1910.20.

WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, ENGINEERING CONTROLS are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following controls are recommended:

* Where possible, automatically pump liquid **Acetone** from drums or other storage containers to process containers.
* Specific engineering controls are recommended for this chemical by NIOSH. Refer to the NIOSH criteria document: *Ketones #78-173*.
* Before entering a confined space where **Acetone** may be present, check to make sure that an explosive concentration does not exist.

Good **WORK PRACTICES** can help to reduce hazardous exposures. The following work practices are recommended:

* Workers whose clothing has been contaminated by **Acetone** should change into clean clothing promptly.
* Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **Acetone**.
* Eye wash fountains should be provided in the immediate work area for emergency use.
* If there is the possibility of skin exposure, emergency shower facilities should be provided.
* On skin contact with **Acetone**, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted **Acetone**, whether or not known skin contact has occurred.
* Do not eat, smoke, or drink where **Acetone** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating or smoking.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

The following recommendations are only guidelines and may not apply to every situation.

Clothing

* Avoid skin contact with **Acetone**. Wear solvent-resistant gloves and clothing. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
* All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.
* ACGIH and safety equipment manufacturers recommend *Butyl Rubber* as a protective material.

Eye Protection

* Wear splash-proof chemical goggles and face shield when working with liquid, unless full facepiece respiratory protection is worn.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS. Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing and medical exams, as described in OSHA 1910.134.

* Where the potential exists for exposures over 250 ppm, use a MSHA/NIOSH approved full facepiece respirator with an organic vapor cartridge/canister. Increased protection is obtained from full facepiece powered-air purifying respirators.
* If while wearing a filter, cartridge or canister respirator, you can smell, taste, or otherwise detect **Acetone**, or in the case of a full facepiece respirator you experience eye irritation, leave the area immediately. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter, cartridge, or canister. If the seal is no longer good, you may need a new respirator.
* Be sure to consider all potential exposures in your workplace. You may need a combination of filters, prefilters, cartridges, or canisters to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
* Where the potential for higher exposures exists, use a MSHA/NIOSH approved supplied-air respirator with a full facepiece operated in the positive pressure mode or with a full facepiece, hood, or

helmet in the continuous flow mode, or use a MSHA/NIOSH approved self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode.

* Exposure to 20,000 ppm is immediately dangerous to life and health. If the possibility of exposures above 20,000 ppm exists, use a MSHA/NIOSH approved self-contained breathing apparatus with a full facepiece operated in continuous flow or other positive pressure mode.

HANDLING AND STORAGE

* Prior to working with **Acetone** you should be trained on its proper handling and storage.
* **Acetone** may explode when mixed with CHLOROFORM, CHROMIC ANHYDRIDE, or a mixture of ACETIC and NITRIC ACIDS.
* **Acetone** is not compatible with OXIDIZING MATERIALS (such as PEROXIDES, CHLORATES, PERCHLORATES, NITRATES, and PERMANGANATES), ACIDS and BASES.
* Store in tightly closed containers in a cool, well-ventilated area away from HEAT, SPARKS and FLAME.
* Sources of ignition, such as smoking and open flames, are prohibited where **Acetone** is used, handled, or stored in a manner that could create a potential fire or explosion hazard.
* Metal containers involving the transfer of 5 gallons or more of **Acetone** should be grounded and bonded. Drums must be equipped with self-closing valves, pressure vacuum bungs, and flame arresters.
* Use only non-sparking tools and equipment, especially when opening and closing containers of **Acetone**.

QUESTIONS AND ANSWERS

Q: If I have acute health effects, will I later get chronic health effects?
A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.

Q: Can I get long-term effects without ever having short-term effects?
A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.

Q: What are my chances of getting sick when I have been exposed to chemicals?
A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.

Q: When are higher exposures more likely?
A: Conditions which increase risk of exposure include physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).

Q: Is the risk of getting sick higher for workers than for community residents?
A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. Because of this, and because of exposure of children or people who are already ill, community exposures may cause health problems.

The New Jersey State Department of Health, Occupational Health Service offers multiple services in occupational health. These include: Right to Know Information Resources, Public Presentations, General References, Industrial Hygiene Information, Surveys and Investigations, and Medical Evaluation. Consult another Fact Sheet for a more detailed description of these services or call (609) 984-1863.

DEFINITIONS

ACGIH is the American Conference of Governmental Industrial Hygienists. It recommends upper limits (called TLVs) for exposure to workplace chemicals.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is assigned by the Chemical Abstracts Service to identify a specific chemical.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes irreversible damage to human tissue or containers.

DEPE is the New Jersey Department of Environmental Protection and Energy.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

HHAG is the Human Health Assessment Group of the federal EPA.

IARC is the International Agency for Research on Cancer, a scientific group that classifies chemicals according to their cancer-causing potential.

A **miscible** substance is a liquid or gas that will evenly dissolve in another.

mg/m^3 means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

MSHA is the Mine Safety and Health Administration, the federal agency that regulates mining. It also evaluates and approves respirators.

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NCI is the National Cancer Institute, a federal agency that determines the cancer-causing potential of chemicals.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

TLV is the Threshold Limit Value, the workplace exposure limit recommended by ACGIH.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

>>>>>>>>>>>>>>>>> E M E R G E N C Y I N F O R M A T I O N <<<<<<<<<<<<<<<<<

Common Name: **ACETONE**
DOT Number: **UN 1090**
DOT Emergency Guide code: **26**
CAS Number: **67-64-1**

Hazard rating	NJ DOH	NFPA
FLAMMABILITY	-	3
REACTIVITY	-	0
FLAMMABLE POISONOUS GASES ARE PRODUCED IN FIRE CONTAINERS MAY EXPLODE IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

FIRE HAZARDS

* **Acetone** is a FLAMMABLE LIQUID.
* Use dry chemical, CO_2, or alcohol foam extinguishers. Use water to keep fire-exposed containers cool.
* POISONOUS GASES ARE PRODUCED IN FIRE.
* CONTAINERS MAY EXPLODE IN FIRE.
* Vapors may travel to a source of ignition and flash back.
* If employees are expected to fight fires, they must be trained and equipped as stated in OSHA 1910.156.

SPILLS AND EMERGENCIES

If **Acetone** is spilled or leaked, take the following steps:

* Restrict persons not wearing protective equipment from area of spill or leak until clean-up is complete.
* Remove all ignition sources.
* Ventilate area of spill or leak.
* Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers.
* Keep **Acetone** out of a confined space, such as a sewer, because of the possibility of an explosion, unless the sewer is designed to prevent the build-up of explosive concentrations.
* It may be necessary to contain and dispose of **Acetone** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection and (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

FOR LARGE SPILLS AND FIRES immediately call your fire department. You can request emergency information from the following:

CHEMTREC: (800) 424-9300
NJDEPE HOTLINE: (609) 292-7172

HANDLING AND STORAGE (See page 4)

FIRST AID

In NJ, POISON INFORMATION 1-800-962-1253

Eye Contact
* Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids.

Skin Contact
* Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Breathing
* Remove the person from exposure.
* Begin rescue breathing if breathing has stopped and CPR if heart action has stopped.
* Transfer promptly to a medical facility.

PHYSICAL DATA

Vapor Pressure: 180 mm Hg at 68°F (20°C)
Flash Point: 1°F (-17°C)
Water Solubility: Miscible

OTHER COMMONLY USED NAMES

Chemical Name:
2-Propanone
Other Names:
Dimethylformaldehyde; Dimethyl Ketone; Dimethylketal

NEW JERSEY DEPARTMENT OF HEALTH
Right to Know Program
CN 368, Trenton, NJ 08625-0368
(609) 984-2202

Summary

Material Safety Data Sheets (MSDSs)

☆ Your company is required by state and federal OSHA laws to have an MSDS for every hazardous chemical in the workplace.

☆ The company must make MSDSs "readily accessible during each work shift to employees when they are in their work area." You and union representatives also have the right to get written copies of MSDSs.

☆ MSDSs are supposed to have a lot of information, especially on:

- Health hazards — short and long term
- Fire hazards — flash point, LEL/UEL, vapor pressure
- Storage requirements — what to keep the product away from
- How to protect yourself — what equipment and proce dures to use
- Date — if the MSDS is more than 3 years old, ask if a new one has been issued.

☆ Don't trust MSDSs alone. Many MSDSs have missing or wrong information or are just confusing to read. They are a good place to start, but always get information from other sources, too.

★ The New Jersey Hazardous Substance Fact Sheets have easy-to-understand information on health effects of a chemical on the first two pages.

Summary
continued

Material Safety Data Sheets (MSDSs)

- Talk to resource people for help in interpreting MSDSs or getting more information. Some suggestions are: the UAW Health and Safety Department at (313)-926-5563, Safety and Health groups in your area (COSH groups), and government agencies like OSHA, NIOSH, Poison Control Centers, or local health departments.

- You need to be familiar with the information in MSDSs before an emergency happens. A good emergency response plan should include chemical-specific information. Specific procedures for safe handling of dangerous chemical releases must also be written down.