Environment

INFORMATION FROM KODAK

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Formaldehyde Emergencies

INTRODUCTION

If you use formaldehyde in your workplace, it is important to plan ahead for handling accidents, spills, and other emergencies. Occupational Safety and Health Administration (OSHA) requires owners of photographic processing facilities to meet certain standards, including the OSHA Formaldehyde Standard. It establishes limits on employee exposure to formaldehyde vapors and solutions. Additional state requirements may apply; be sure you know what your state regulations are.

OSHA requires employers to develop an Emergency Action Plan for any area where hazardous materials are manufactured, used, transferred, or stored.

OSHA makes the following statement concerning formaldehyde emergencies in the OSHA Formaldehyde Standard 29CFR §1910.1048:

> Employer will prepare for any situation where equipment failure, spill or rupture of containers, or failure of control equipment would result in an uncontrolled release of formaldehyde that could result in injury or loss of life. If such circumstances could occur in an accident, the employer must establish procedures for evacuation and access to emergency medical care, obtain needed equipment for evacuation and reentry into the area, and establish procedures for equipment repair, spill cleanup, decontamination, and waste disposal.

Even relatively small spills (a pint or less of 37% formalin, for example) in a ventilated area can generate potentially life-threatening airborne levels.

A 30-minute exposure to 100 ppm of formaldehyde is potentially fatal, and pulmonary edema (excess fluid in the lungs) can occur after exposures of 50 ppm for a few minutes.

If you determine, through the use of actual or objective data, that spills or leaks of solutions containing formaldehyde could cause serious *injury or loss of life*, then you must develop an appropriate Emergency Action Plan. Tables I, II, and III (page 4) describe potential health effects from exposure to formaldehyde. Use these tables to help you decide whether your workplace needs an Emergency Action Plan for formaldehyde.

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ACCIDENTS AND SPILLS

The OSHA Formaldehyde Standard requires that employers train employees in their specific duties in the event of an emergency. Employers are required to make medical examinations available as soon as possible to all employees who have been exposed to formaldehyde in an emergency. Employers must also provide medical surveillance if an employee experiences signs and symptoms of overexposure to formaldehyde (this does not usually occur if formaldehyde levels are less than 0.1 ppm in the air or 0.1% in solution).

FIRST AID PRACTICES

Inform all employees of first aid procedures and the location of emergency showers and eyewashes. Suggested practices include:

- If a solution containing 1% or more formaldehyde is splashed in the eyes, go immediately to an eyewash facility. Flush eyes with cool water for at least 15 minutes, then seek medical attention promptly.
- If a solution containing 1% or more formaldehyde is splashed on your skin or clothing, remove any contaminated clothing and wash affected body area for at least 15 minutes. Seek medical attention if symptoms occur.
- If a solution containing greater than 1% formaldehyde (damaging to skin and eyes) is spilled, evacuate all personnel from the affected area until the spill is cleaned up by trained personnel who are using the appropriate protective equipment.
- If formaldehyde is inhaled, move victim to fresh air. Get medical attention. If victim is not breathing, give artificial respiration. If breathing is difficult, provide oxygen.

SMALL SPILLS

You may choose to train employee teams to handle small spills (8 oz / 250 ml or less). If you do, team members must use the appropriate protective equipment and clothing. This includes impervious boots, gloves, and clothing (nitrile, neoprene, or butyl rubber are suitable), gas-proof goggles (if a full face respirator is not required), and proper respiratory protection. In some circumstances, a self-contained breathing apparatus (SCBA) and full body protection are required. Anyone who uses respiratory protection must have completed a respirator training program and have medical approval (29CFR §1910.134 Respiratory Protection). Additional OSHA requirements may apply.

LARGE SPILLS

If you spill a large amount of concentrated formaldehyde solution and you don't wish to manage the spill yourself, or if protective equipment is not available, you may choose to get outside help. You can have your local fire department, or outside emergency personnel trained in handling hazardous materials, provide assistance. They might charge for their time and / or equipment, so you may wish to contract for their services in advance.

SPILL CLEAN-UP

The method you use to clean a spill must comply with local, state, and federal regulations regarding the cleanup of toxic waste. You may also be required to notify state, local, or federal authorities.

If possible, contain the spill to minimize contamination and aid in cleanup. You may be required to notify authorities to release a spill into a sewer system. If local regulations permit, a formaldehyde spill may be flooded with cold water and flushed to a floor drain.

- If local regulations prohibit flushing spills to the drain, or if the spill occurs in an area that cannot be flooded with cold water, use absorbent materials such as HAZORB® pillows to absorb the spill. Bag, seal, and label the materials as hazardous waste. Contact a licensed waste hauler for disposal. The label on each bag must warn of the presence of formaldehyde and its potential health effects. An appropriate label might read "Warning—contains formaldehyde which may cause cancer based on animal data. May cause eye, skin, or respiratory tract irritation. May cause allergic skin or respiratory reaction."

PREPARING AN EMERGENCY ACTION PLAN

The elements of an Emergency Action Plan are outlined below. On pages 5–7, you will find worksheets that correspond to this outline. These tools are provided to guide you through the process of developing an Emergency Action Plan.

OUTLINE

A. Statement of General Policy

Develop a statement of general policy that explains what to do in case of a spill. Your plan should include a list of all potentially hazardous materials, including formaldehyde, that are used or stored at your site and should also provide answers to questions such as: Should the Haz-Mat team always be called? and Will some types of spills be cleaned up by specially trained employees?

B. Response Team

Identify the coordinator and members of the response team along with their phone/pager numbers. Briefly describe the response team members' training.

C. Areas Where Spills May Occur

Identify areas where spills may occur. Include all potential spill areas: loading docks, stock rooms, mixing areas, etc.

Specific Products That May Be Hazardous

List all materials that could be hazardous if spilled. Identify any pertinent health, safety, or environmental concerns related to each of these materials. (See container labels and Material Safety Data Sheets.)

D. Equipment Available for Spill Cleanup

If you plan to have trained employees clean up certain spills, list the equipment they must use, and where the equipment is stored. You may want to prepare a "spill cart" to carry supplies and equipment for spill control and cleanup. Identify the person responsible for restocking supplies.

Your local fire department may be able to provide information on new products for containment and encapsulation of spills. These are particularly valuable where local regulations do not allow you to wash dilute formaldehyde solutions down the drain.

E. What to Do When a Spill Occurs

Establish the chain of command.

- Who should be called first?
- Who coordinates spill cleanup procedures?
- Is there someone else to contact?
- What are each participant's responsibilities?
- What is the first thing you do when you see a spill?
- What does the Spill Coordinator do when alerted of a spill?
- How do you contain and clean up the spill?
- What outside help might be required and how do you get it?
- What type of information (name of product, volume/quantity, size of area affected, number of people affected, condition of affected employees) do I have to report to the emergency response team?
- Establish your notification requirements:
  - Who is responsible for notifying the appropriate authorities?
  - When does this notification take place?
  - What are their titles and phone numbers?
  - What is the written follow-up procedure?
- Resource Information

List names and phone numbers for emergency resources, such as the fire department, hazardous materials team, physician, ambulance, etc.

HEALTH EFFECTS OF EXPOSURE TO FORMALDEHYDE

Table I. Potential Short-Term (Acute) Health Effects from Exposure to Airborne Formaldehyde*

Exposure Limits	Concentration (ppm)	Duration Causing Effect	Signs and Symptoms*
	<0.05	Minutes to hours	Usually no effects observed
OSHA trigger for "potential" hazard 0.1 ppm	0.05 – 0.1	Minutes to hours	Mild eye and throat irritation in a few sensitive individuals
ACGIH Ceiling Limit 0.3 ppm OSHA "Action Level" 0.5 ppm	0.1 – 0.5	Minutes to hours	Slight odor detected. Mild nose and throat irritation and dryness, mild eye irritation and tearing.
OSHA 8-hr PEL 0.75 ppm OSHA 15-min STEL 2 ppm	0.5 – 2	Minutes to hours	Variable symptoms including thirst, headache, fatigue, nausea, dizziness; mild upper/lower respiratory tract irritation, dry and sore throat; irritation of eyes/nose/throat
	5	Minutes	Avoidance: most people cannot tolerate prolonged exposure
	10	Minutes	Intolerable for most people
	5 – 30	Minutes	Coughing, wheezing, chest tightness, difficulty breathing, severe eye/nose/throat irritation
	30 – 50	Minutes	May cause damage to respiratory tract, severe eye irritation; may cause pulmonary edema
	100	30 Minutes	Immediately dangerous to life

* In addition to the effects noted above, allergic respiratory tract reactions might occur in certain sensitive individuals at any level of exposure.

Table II. Potential Short-Term (Acute) Health Effects from Exposure to Formaldehyde Solutions

Route of Exposure	Type of Solution	Signs and Symptoms*
Ingestion	Concentrated (≥10%)	Severe irritation and burns of the mouth, throat, and stomach; severe stomach pains with possible loss of consciousness and death. Solutions containing ≥4% methanol can cause blindness.
	Dilute	Irritation of the mouth, throat, and stomach
Skin contact	Concentrated	Moderate irritation to severe burns, allergy
	Dilute	Mild irritation, allergy
Eye contact	Concentrated	Moderate irritation to severe burns; possible blindness
	Dilute	Irritation

* Severity of effect depends on concentration and volume of solution, duration of exposure, and thoroughness of removal.

Table III. Potential Long-Term (Chronic) Health Effects from Exposure to Formaldehyde

Route of Exposure	Duration Causing Effect	Signs and Symptoms
Inhalation	Varies; single episodes to years	Asthma, bronchitis
	Years	Cancer of respiratory tract in rats exposed to very high concentrations; possible carcinogen in humans

EMERGENCY ACTION PLAN WORKSHEET

A. Statement of General Policy

Summary

B. Response Team

1. **Coordinator** **Phone/Pager #**

2. **Response team members** **Phone/Pager #**

3. **Brief description of response team training**

C. Areas Where Spills May Occur

Specific products that may be hazardous

Product	Potential health effects

D. Equipment Available for Spill Clean-up

Equipment	Location

Who is responsible for restocking?

E. What To Do When a Spill Occurs

1. **What is the first thing you do when you see a spill?**

2. **What do you report to the emergency response team?**

3. **What does the Spill Coordinator do when alerted of a spill?**

4. **How do you contain and clean up the spill?**

5. **What outside help might be required and how do you get it?**

F. Resource Information

Name	Work Phone	Home Phone/Pager #

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MORE INFORMATION

If you have environmental or safety questions about Kodak products or services, contact Kodak Environmental Services at 1-716-477-3194, between 8 a.m. and 5 p.m. (Eastern time) or visit KES on-line at www.kodak.com/go/kes.

Kodak also maintains a 24-hour health hotline to answer questions about the safe handling of photographic chemicals. If you need health-related information about Kodak products, call 1-716-722-5151.

For questions concerning the safe transportation of Kodak products, call Kodak Transportation Services at 1-716-722-2400.

Additional information is available on the Kodak website and through the U.S.A./Canada faxback systems.

The products and services described in this publication may not be available in all countries. In countries other than the U.S., contact your local Kodak representative, or your usual supplier of Kodak products.

The following publications are available from Kodak Customer Service or from dealers who sell Kodak products.

J-110	*Formaldehyde Use in Photographic Processing Facilities*
J-111	*Determining Workplace Exposure to Formaldehyde*
J-113	*About the OSHA Formaldehyde Standard*
J-114	*Formaldehyde Training*
J-115	*Formaldehyde Information*
J-316	*Emergency Preparedness for Photographic Processing Facilities*

For more information about Kodak Environmental Services, visit Kodak on-line at:
www.kodak.com/go/kes

Many technical support publications for Kodak products can be sent to your fax machine from the Kodak Information Center. Call:
U.S. 1-800-242-2424, Ext. 33 / Canada 1-800-295-5531
—Available 24 hours a day, 7 days a week—

If you have questions about Kodak products, call Kodak.
In the U.S.A.:
1-800-242-2424, Ext. 19, Monday–Friday
9 a.m.–7 p.m. (Eastern time)
In Canada:
1-800-465-6325, Monday–Friday
8 a.m.–5 p.m. (Eastern time)

This publication is intended to assist managers of photographic processing facilities in their compliance requirements under the OSHA Formaldehyde Standard. Additional local and state requirements may also apply. Verify the specific requirements for your facility with your legal counsel.

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