



Vapor Containment During Liquid Transfer in Equipment Processing

405

Special

This guidance sheet is intended to provide best practice advice. It is designed to help employers (including the self-employed and small businesses) address hazardous conditions in the workplace. The recommendations are intended to provide information for identifying hazardous substances or work activities and simple precautions for minimizing risks to workers. This guidance was developed by the National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention (NIOSH/CDC) through research in various work environments and industry sectors in partnership with stakeholders representing industry, labor groups, academia, and other government agencies.

MSDS

Obtain (material) safety data sheets (MSDSs) from your product supplier. Use the information on these sheets to identify the hazards associated with specific chemicals and to explore the possibility of using safer substitutes. If several products are equally efficacious, try to use the least hazardous product(s).

Surveillance

All workers exposed or liable to be exposed to a substance that may cause adverse health effects during "normal" use should be under suitable medical surveillance. The extent and detail of the medical surveillance should be related to the degree of risk identified during an assessment. An occupational health professional should be consulted to determine the degree of risk and level of surveillance. Medical surveillance should include the maintenance of a medical record in a suitable form for each exposed worker. This guidance sheet can be used as part of the approach to control potentially adverse health effects from inhalation of airborne contaminants.

Controls

This guidance sheet recommends the use of local ventilation along with appropriate protective equipment.

See COSHH Essential Control Guidance Sheets 400 (www.coshh-essentials.org.uk/assets/live/G400.pdf) and 402 (www.coshh-essentials.org.uk/assets/live/G402.pdf).

This guidance sheet is currently in DRAFT form awaiting review and approval. Please do not quote, cite, or distribute.

The Dow Chemical Company, Kaiser Permanente, MediSHARE Environmental Health and Safety Services, Society of Gastroenterology Nurses and Associates (SGNA), NIOSH, and Health and Safety Executive (HSE), United Kingdom.

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health



Workplace and Access

- Ensure that only trained workers have access to liquid solutions used for equipment processing. Allow workers to handle liquid solutions only after receiving training about hazards, methods to control these hazards, and proper handling procedures.
- Limit vapours by covering the trays containing disinfectant solution as much as possible. Keep containers closed between uses. Minimize exposures to large liquid surface areas.
- Avoid spilling or splashing liquid solutions.
- Do not attempt to contain or clean up spill without previous training and appropriate PPE. (See Control Guidance Sheet 404.)

Procedures for Transferring Liquid Solutions for Use

- Use automated endoscope washers with automatic transfer pumps if available. Internal transfer pumps are preferred, but external pumps may also be used. The illustration below shows an external transfer pump.
- When pouring solution, pour as close to the reservoir as possible and aim the spout away from your body.



Automatic transfer pump

- Avoid splashing solution on the skin.
- Remove cap and foil from only one container at a time and recap each container once emptied (or partially emptied).
- Pour one container at a time.
- Use level and uncluttered counter space(s).
- Ensure that the ventilation system provides negative pressure and a minimum of 12 air changes per hour. Use a hood over the work counter with air exhausted outside and away from building air intakes.
- If using a ductless fume hood, ensure that filtering media, i.e., potassium permanganate or HEPA, is appropriate for the type of solution used. Implement routine filter change-out into a preventive maintenance plan. Change the filter if you experience any adverse health effects or if you smell any disinfectant solution.
- Maintain appropriate room temperature and humidity levels.
- Minimize spills by storing containers within secondary containment.
- Keep a spill clean-up kit with a neutralization agent nearby. Contain spills with spill pillows, pigs, socks, or absorbent. Remember to store the spill kit away from likely spill areas so it may be retrieved without passing through the spill area.
- Maintain appropriate room temperature at 68°–73°F (20°–23°C) and 30%–60% relative humidity levels during liquid transfer.

Disposal of Waste Solution

- Add neutralizing products containing either glycine or sodium bisulfite to the secondary container if it is necessary to transport waste solution for disposal. (See Control Guidance Sheet 404.)
- Avoid splashing solution on the skin.

Special Care

Contact with glutaraldehyde solutions can lead to skin soreness and itching, rashes, blistering (dermatitis), damage to the eyes, and difficulty in breathing.

Cleaning and Housekeeping

- Keep the work area clean and well organized.
- Clean up spills promptly: practice this at least twice per year (See Control Guidance Sheet 404.)
- Dispose of empty containers and wastes safely.
- Wear appropriate eye, skin, and respiratory protection (personal protective equipment [PPE]) when cleaning up spills.

Personal Protective Equipment (PPE)—(See Control Guidance Sheet 407.)

- Follow the instructions on product labels or safety data sheets.
- Ask your safety-clothing supplier to help you purchase the appropriate PPE.
- You may need respiratory protective equipment (RPE) in case of a spill. Consult your safety manager or PPE supplier.
- Make sure you know how to check that PPE fits correctly. Consult your safety manager or supplier.
- Wear protective gloves: single-use nitrile gloves are acceptable. Do not use latex gloves for protection against exposure to some disinfectants, e.g., glutaraldehyde.
- Dispose of single-use gloves every time you take them off.
- Use skin creams for skin protection and help in washing contamination from the skin. These are not 'barrier creams' and do not protect the skin from disinfectant exposure. After work, use creams to help replace skin oils.

Health Surveillance—(See Control Guidance Sheet 402.)

Training

- Show your workers this sheet and make certain that they understand it.
- Instruct workers about the risks of using the product: see product labels or the (material) safety data sheet from your product supplier.
- Make certain everyone knows how to clean up spills promptly and safely.

Supervision

- Establish a spill containment team responsible for developing and executing procedures for spills. The team should include a safety committee representative, a physician, the unit supervisor, and other personnel as necessary.
- Make certain that ventilation is working properly and that PPE is being used correctly.
- Ensure that the health surveillance system is being executed for those who need it.

Further information

Consult the supplier's (material) safety data sheet for further information or contact phone numbers for emergency information. Obtain additional information from the NIOSH toll-free number 1-800-CDC-INFO (1-800-232-4636) within the United States or 513-533-8328 outside the United States), or access the Web site at www.cdc.gov/niosh/cntc_ni1.html.

Worker Checklist

- Always follow the standard operating procedures.
- If you find any problems, tell your supervisor. Do not continue working.
- Immediately report skin soreness and itching, rashes, blistering (dermatitis), damage to the eyes or difficulty in breathing to your supervisor.
- Wash your hands after use, and before and after eating, drinking, smoking and using the lavatory.
- Never clean your hands with concentrated cleaning products or solvents.
- Cooperate with health surveillance teams.
- Clean up spills immediately, but only after putting on the appropriate PPE. Absorb spills in granules and put them in a bin with a lid. (See Control Guidance Sheet 404.)
- Check that your PPE works properly every time you put it on.
- Use, maintain, and store your PPE according to instructions.

To receive NIOSH documents or more information about occupational safety and health topics, contact NIOSH at

Telephone: **1-800-CDC-INFO**
(1-800-232-4636)
TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov

or visit the NIOSH Web site at
www.cdc.gov/niosh.

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