

U.S. Department of  
Homeland Security

United States  
Coast Guard



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COMDTINST 6260.30A  
20 JUL 2005

COMMANDANT INSTRUCTION 6260.30A

Subj: POLYURETHANE COATINGS EXPOSURE CONTROL

- Ref: (a) Safety and Environmental Health Manual, COMDTINST M5100.47 (series)  
 (b) Technical Guide: Practices for Respiratory Protection, COMDTINST M6260.2 (series)  
 (c) 29 CFR 1910.94, Ventilation  
 (d) Hazard Communication for Workplace Materials, COMDTINST 6260.21 (series)  
 (e) Medical Manual, COMDTINST M6000.1 (series)

1. PURPOSE. This Instruction promulgates administrative and engineering controls for the use of isocyanate-containing products. This Instruction applies to all Coast Guard Air Stations, the Aircraft Repair and Supply Center, the Aviation Training Center, Coast Guard cutters, and Coast Guard industrial activities, which use isocyanate-containing products including but not limited to: polyurethane, polyurea and polyurea/polyurethane hybrid coatings for aircraft and buoy maintenance.
2. ACTION. Area and district commanders; commanders, maintenance and logistics commands; commanding officers of Headquarters units; Commander, Coast Guard Activities worldwide; and chief of offices and special staff divisions at Headquarters shall ensure compliance with the provisions of this Instruction. Internet release is authorized.
3. DIRECTIVES AFFECTED. Polyurethane Coatings Exposure Control, COMDTINST 6260.30, is cancelled.

DISTRIBUTION – SDL No. 143

	a	b	c	d	e	f	g	h	I	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
A	3	2	2	2	2	2	2	2	1	1		1	2	2	2	1	1		1		2					
B		8	10	2	5	10	1	10	5	5	10	10	2	20	2	1	10	20	5		3	1	1	1	1	
C	7	5		6	4	2	1	1	1		10	1	2	2		1	1	1	1		1	1	1			1
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NON-STANDARD DISTRIBUTION:

4. DISCUSSION. Isocyanate-containing coatings such as polyurethane, polyurea or polyurethane/polyurea hybrid coatings provide a weather resistant, colorfast topcoat for protecting surfaces from abrasion and corrosion. These coatings are described as one-part or two-part systems. The one-part polyurethane coating is further classified as either moisture-cured or heat-cured. These coatings present no health hazard once cured; however, they do present a health hazard during preparation, application and curing stage due to the release of isocyanate vapors and mists. Two-part systems present the greatest potential for exposure to isocyanate vapors and mists. The isocyanates found in these coatings include Toluene Diisocyanate (TDI), Hexamethylene Diisocyanate (HDI), and Diphenylmethane Diisocyanate or Methylene bisphenyl isocyanate (MDI).
5. DEFINITIONS. For the purposes of this Instruction, the following terms are defined.
  - a. Heat-Cured Polyurethane System. Either a one-part or two-part system where heat must be used to release a chemical agent (called blocking agent) from polyisocyanate. In the absence of the blocking agent, polyisocyanate then reacts with a polyol.
  - b. Moisture-Cured Polyurethane. One-part polyurethane in which curing process occurs by the reaction of polyisocyanate with moisture present in the atmosphere. This reaction results in the production of amine compound, which further reacts with the remaining isocyanate to form urea.
  - c. One-Part System. A system where the isocyanates are pre-polymerized, so that very little of free isocyanate remains.
  - d. Polyurea. The product of a reaction between a polyisocyanate and amine terminated resin compounds.
  - e. Polyurethane. The product from the reaction between polyisocyanate and a polyol.
  - f. Polyurethane/Polyurea Hybrid. The result of a chemical reaction between polyisocyanate and a mixture of polyol and amine terminated resins.
  - g. Two-Part System. The two-part systems contain un-reacted polyisocyanate and a polyol or polyamide resin in separate containers, which are mixed together immediately preceding application.
6. EXPOSURE AND HEALTH EFFECTS.
  - a. Health Effects. Isocyanate vapors cause irritation of the skin, eyes, and respiratory tract. In addition, persons exposed to isocyanates may become sensitized (allergic to isocyanates). It may also cause persons who have skin exposure to become sensitized and develop allergic dermatitis. Once sensitized,

subsequent exposure to very small amounts of isocyanates can cause severe allergic reactions, which produce asthma-like symptoms. A person who is sensitized to isocyanates must no longer work with or in areas where there is potential for exposure to isocyanate vapor or mist.

- b. Exposure Limits. Reference (a) establishes a Threshold Limit Value (TLV) of 0.005 parts per million (ppm) as an 8-hour time-weighted average for TDI, MDI and HDI. In addition, a 15-minute Short-Term Exposure Limit (STEL) of 0.02 ppm is established for TDI.

## 7. AUTHORIZED USE.

- a. Two-part polyurethane coating systems are only authorized for use on Coast Guard aircraft and as topcoat paint for Aids to Navigation (ATON) equipment. These coatings are not authorized for the exterior or interior of cutters, boats, ground support equipment, or any other equipment.
- b. Only authorized Coast Guard personnel and qualified contractors shall apply two-part coating systems.
- c. One-part (moisture-cured or heat-cured) coating systems may be used in accordance with the instructions listed on the Coating Manufacturer's Material Safety Data Sheets (MSDS) and the requirements under paragraph 8 of this Instruction.

## 8. REQUIREMENTS.

- a. Protective Equipment.
  - (1) The following personal protection equipment (PPE) is required during any spray applications of isocyanate-containing compounds:
    - (a) Full-face, type C, continuous flow air-supplied respirator that meets the requirements of reference (b).
    - (b) Protective coveralls (see enclosure (1)) with sleeves taped at the wrists.
    - (c) Solvent-resistant butyl rubber, nitrile or neoprene gloves (see enclosure (1)).
  - (2) For roller or brush applications of isocyanate-containing compounds, use of the following PPE is required:
    - (a) Half-face air purifying respirator with organic vapor/paint mist cartridges that meets the requirements of reference (a). Respirator cartridges changes shall be in accordance with an established

respiratory cartridge change out schedule.

- (b) Protective coveralls as specified in enclosure (1).
  - (c) Solvent-resistant butyl rubber gloves, neoprene or nitrile gloves (see enclosure (1)).
  - (d) Full-face shield shall be used for eye and face protection.
- b. Safe Work Practices. Safe work practices shall be observed for all operations that involve the use of isocyanate-containing products. Such safe work practices shall include but not be limited to the following:
- (1) Preparation and Clean-up. A minimum of a half-face respirator with organic vapor/paint mist combination cartridges, eye protection, face shield, protective clothing and gloves shall be used when opening, mixing and transferring paint, loading spray equipment and during cleanup. The mixing, preparation and transferring of paint shall be done in a place with adequate ventilation.
  - (2) Paint Spray Booth. Whenever possible, the touch-up painting of parts such as individual aircraft panels or buoys with isocyanate-containing coating systems shall be done in a paint spray booth that meets the requirements of reference (c). Personnel without the PPE listed in paragraph 8.a.(1) of this Instruction shall not enter spray booths for a minimum of 30 minutes following the application of the coating systems. In addition, ventilation in the spray booth shall remain operational for a minimum of 30 minutes following the application of the coating systems.
  - (3) Hanger/Maintenance Bay.
    - (a) Only touch-up painting of areas less than or equal to one square foot (cumulative) is allowed in the hangar/maintenance bay area.
    - (b) Read and follow instructions on the container label before start of the job.
    - (c) If using paint material from aerosol can, ensure that the nozzle arrow is pointed away from the face
    - (d) Only personnel involved in the painting job are allowed in the immediate vicinity of the work area.
    - (e) Ensure that adequate ventilation is provided in the hangar/maintenance bay during the painting and curing process.

- (4) Spray painting outdoors. When applying isocyanate-containing coating systems outdoors, an area of 100 feet (minimum) in all directions shall be roped off. Personnel not wearing the PPE required in paragraph 8.a.(1) of this Instruction are prohibited from entering this area while spray-painting operations are in progress and for a minimum of 30 minutes following application.
  - (5) ATON Equipment. If cost effective and practical, coatings shall be applied by roller or brush to ATON equipment. This will significantly reduce the level of airborne isocyanates. Only personnel wearing the PPE required in paragraph 8.a.(2) of this Instruction are allowed in the work area or the immediate vicinity.
  - (6) Personal Hygiene. Personnel involved with the application of all isocyanate-containing coatings or compounds shall wash their hands and face or shower after using these coatings to remove any residual contamination from the skin; remove and dispose of any contaminated clothing appropriately; and refrain from eating or drinking in the work area.
  - (7) Spill Control. To prevent accidental spilling, containers shall be covered when not in use. Spills shall be cleaned up immediately in accordance with the instructions on the product's Material Safety Data Sheet (MSDS).
- c. Hazard Communication. In accordance with reference (d), personnel assigned to work with isocyanate containing compounds such as polyurethane, polyurea, and polyurea/polyurethane hybrid coating operations shall be trained. Such training shall include:
- (1) The use of MSDSs for the coatings or products used; and
  - (2) Information on isocyanate hazards.
- d. Respiratory Protection. In accordance with reference (b), affected units shall implement a Respiratory Protection Program.
- e. Medical Monitoring. In accordance with the requirements in reference (e), personnel assigned to spray-painting operations utilizing isocyanate-containing products such as polyurethane; polyurea or polyurea/polyurethane hybrid for 30 or more days per calendar year shall be enrolled in the Coast Guard Occupational Medical Surveillance and Evaluation Program. Units should contact their servicing MLC detached Safety and Environmental Health Officer (SEHO) for enrollment procedures.
9. RESPONSIBILITIES.
- a. Commanding officers of units engaged in the application of polyurethane;

polyurea, polyurea/polyurethane hybrid coatings or other isocyanate-containing compounds shall ensure that the requirements of this Instruction are implemented.

- b. Commanders of maintenance and logistics commands shall provide the necessary training and technical support to ensure that units comply with the requirements of this Instruction.

10. ENVIRONMENTAL IMPACT CONSIDERATIONS. The development and promulgation of this Instruction has been thoroughly reviewed by the Coast Guard and it has been determined to be categorically excluded from further environmental documentation, in accordance with Categorical Exclusions #1 and #33, Figure 2-1 of the National Environmental Policy Act Implementing Procedures and Policy for Considering Environmental Impacts, COMDTINST M16475.1D, as amended by the notice of final agency policy set forth in the Federal Register, Vol. 67, No. 141, pp. 48243-48246 (23 July 2001).

11. FORMS/REPORTS. None required.

PAUL J. HIGGINS /s/  
Director of Health and Safety

Encl: (1) Stock Numbers for Personal Protective Equipment

**STOCK NUMBERS FOR PERSONAL PROTECTIVE EQUIPMENT**

**ITEM            NSN**

Coveralls, disposable white, TYVEK material

Small	8415-00-601-0793
Medium	8415-00-601-0794
Large	8415-00-601-0797
X-Large	8415-00-601-0801

Gloves, Butyl Rubber

Small	8415-00-753-6551
Medium	8415-00-753-6552
Large	8415-00-753-6553
X-Large	8415-00-753-6554

Goggles, industrial, chemical splash

One size	4240-00-190-6432
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NOTE:

Prior to ordering, check with your supply department to ensure accuracy of stock numbers.