

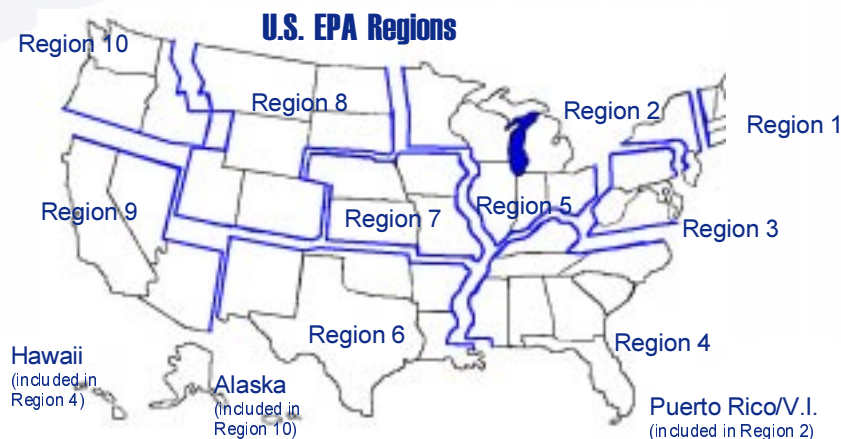
# Pollution Control Technology 20

## Introduction

Federal, state, and local laws and regulations are in place to prevent pollution by metal finishing operations. In many cases, local laws are the most restrictive. This section will provide an introduction to conventional technology and equipment currently used by metal finishing facilities to meet regulations. This includes the treatment of wastewater prior to discharge, the ventilation of the processing tanks prior to discharge into the outside environment, and energy conservation measures that should be considered for new and existing facilities. It also explores more advanced techniques that result in the reuse and/or recovery of the processing chemicals.

The metal finishing industry is heavily regulated on a national, state, and local level. Each regulation is enforced by a different agency. For example, in many cases regulations pertaining to water discharges to sewers are enforced by the local publicly owned treatment works (POTW) or sewage treatment facility. If the POTW does not have control authority, or if the discharge goes to a stream or on the ground, then one of 10 regional offices of the U.S. Environmental Protection Agency (EPA) has authority. The regional EPA office may also have enforcement authority over numerous other regulations promulgated by the U.S. EPA under mandate from the federal government. This includes regulations under the Clean Air Act, the Toxic Substances Control Act (TOSCA), the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation, & Liability Act (CERCLA), the Emergency Planning & Right to Know Act (EPCRA), and numerous other acts passed by Congress. For emergency spills, fires, explosions, call the National Response Center: U.S. Coast Guard, 800-424-8802, 2100 Second Street, S.W., Washington DC, 20593. The EPA also has a directory assistance number at 202-260-2090, and assistance is available on the EPA Web site, [www.epa.gov](http://www.epa.gov).

This section provides a map of EPA regions and contact information for each office.



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- **Region 1**, JFK Federal Building, 1 Congress Street, Boston, MA 02203; (617) 565-3420; *www.epa.gov/region*
- **Region 2**, 290 Broadway, 26th Floor, New York, NY 10007-1866; (212) 637-3000; (212) 637-3526 (fax); *www.epa.gov/region*
- **Region 3**, 841 Chestnut Building, Philadelphia, PA 19107; (215) 566-5000; *www.epa.gov/region*
- **Region 4**, Atlanta Federal Center, 61 Forsyth Street, S.W., Atlanta, GA 30303-3104; (404) 562-9900; *www.epa.gov/region*
- **Region 5**, 77 West Jackson Boulevard, Chicago, IL 60604; (312) 353-2000, (800) 621-8431 (in Region 5 states only); *www.epa.gov/region*
- **Region 6**, Fountain Place, 1445 Ross Avenue, Suite 1200, Dallas, TX 75202-2733; (214) 665-2200; *www.epa.gov/region 6*
- **Region 7**, 726 Minnesota Avenue, Kansas City, KS 66101; (913) 551-7000; *www.epa.gov/region 7*
- **Region 8**, 999 10th Street, Suite 500, Denver, CO 80202-2466; (303) 312-6312, (800) 227-8917 (in Region 8 states only); *www.epa.gov/region 8*
- **Region 9**, 75 Hawthorne Street, San Francisco, CA 94105; (415) 744-1702; *www.epa.gov/region 9*
- **Region 10**, 1600 Sixth Avenue, Seattle, WA 98101; (206) 553-4973 or (206) 553-1200; *www.epa.gov/region 10*

Your state EPA, which in some states is called the Department of Natural Resources or similar name, may have been granted authority by the regional U.S. EPA office to act on its behalf. The state EPA also enforces any state environmental regulations passed by the state legislature. Provided below is contact information for each state environmental protection office. (Note: Since area codes change frequently, you may need to get the latest code form information.)

- **Alabama**, Department of Environmental Management, 1751 Cong. W. L. Dickinson Drive, Montgomery, AL 36109; (334) 271-7700
- **Alaska**, Department of Environmental Conservation, 410 Willoughby Avenue, Juneau, AK 99801-1795; (907) 465-5000
- **Arizona**, Department of Environmental Quality, 3033 North Central Avenue, Phoenix, AZ 85012-2809; (602) 207-2300
- **Arkansas**, Department of Pollution Control and Ecology, 8001 National Drive, Little Rock, AR 72219-8913; (501) 682-0744
- **California**, Environmental Protection Agency, P.O. Box 806, Sacramento, CA 95814; (916) 445-3846
- **Colorado**, Department of Public Health and Environment, 4300 Cherry Creek Drive South, Denver, CO 80222-1530; (303) 692-2000
- **Connecticut**, Department of Environmental Protection, 79 Elm Street, Hartford, CT 06106; (860) 424-3000
- **Delaware**, Department of Natural Resources & Environmental Control, 89 Kings

Highway, P.O. Box 1401, Dover, DE 19903; (302) 739-4403

- **Florida**, Department of Environmental Protection, 3900 Commonwealth, Twin Towers Office Building, Tallahassee, FL 32399-2400; (904) 488-4805
- **Georgia**, Department of Natural Resources, Environmental Protection Division, 205 Buller Street, Suite 1152-E., Atlanta, GA 30334; (404) 656-4713
- **Hawaii**, State Department of Health, 5 Waterfront Plaza, Suite 250, 919 Ala Moana Boulevard, Honolulu, HI 96813; (808) 5864304
- **Idaho**, Division of Environmental Quality, 1410 North Hilton, Boise, ID 83706; (208) 334-5840
- **Illinois**, Environmental Protection Agency, 2200 Churchill Road, Springfield, IL 62794; (212) 782-2829
- **Indiana**, Department of Environmental Management, 150 W. Market St., Suite 703, Indianapolis, IN 46206-6015; (317) 232-8172
- **Iowa**, Department of Natural Resources, Henry Wallace Building, 502 E. 9th Street, Des Moines, IA 50319-0034; (515) 281-8941
- **Kansas**, Department of Health and Environment, Forbes Field Building 740, Topeka KS 66620; (913) 296-1500
- **Kentucky**, Department for Environmental Protection, 14 Reilly Road, Frankfort, KY 40601; (502) 564-2225
- **Louisiana**, Department of Environmental Quality, 7290 Bluebonnet Road, Baton Rouge, LA 70884; (504) 765-0741
- **Maine**, Department of Environmental Protection, State House Station 17, Augusta, ME 04333; (207) 287-7688
- **Maryland**, Department of the Environment, 2500 Broening Highway, Baltimore, MD 21224; (410) 631-3000
- **Massachusetts**, Department of Environmental Protection, 1 Winter Street, Boston, MA 02108; (617) 292-5500
- **Michigan**, Department of Environmental Quality, 106 West Allegan Street, P.O. Box 30473, Hollister Building, Sixth Floor, Lansing, MI 48909; (800) 662-9278
- **Minnesota**, Pollution Control Agency, 520 Lafayette Road, St. Paul, MN 55155; (612) 296-6300
- **Mississippi**, Department of Environmental Quality, Office of Pollution Control, 2380 Highway 80W, P.O. Box 10385, Jackson, MS 39289-0385; (601) 961-5171
- **Missouri**, Department of Natural Resources, 205 Jefferson Street, P.O. Box 176, Jefferson City, MO 65102; (573) 751-3443
- **Montana**, Department of Health and Environmental Sciences, P.O. Box 200901, Helena, MT 59620; (406) 444-2544
- **Nebraska**, Department of Environmental Quality, 1200 North Street, Suite 400, P.O. Box 98922, Lincoln, NE 68509-8922; (402) 471-2186
- **Nevada**, Division of Environmental Protection, 333 West Nye, Carson City, NV 89710; (702) 687-4670
- **New Hampshire**, State Department of Environmental Services, 6 Hazen Drive, Concord, NH 03301; (603) 271-3503

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- **New Jersey**, Department of Environmental Protection 401 East State Street, Trenton, NJ 08625; (609) 777-3373
- **New Mexico**, Environment Department, 1190 St. Francis Drive, P.O. Box 26110, Santa Fe, NM 87505; (505) 827-2855
- **New York**, Department of Environmental Conservation, 50 Wolf Road, Albany, NY 12233; (518) 457-5400
- **North Carolina**, Department of Environment, Health, and Natural Resources, P.O. Box 27687, Raleigh, NC 27611-7667; (919) 733-4984
- **North Dakota**, Department of Health and Consolidated Laboratories, Environmental Health Section, 600 East Boulevard Avenue, P.O. Box 5520, Bismarck, ND 58506-5520; (701) 328-2372
- **Ohio**, Environmental Protection Agency, 1800 WaterMark Drive, P.O. Box 1049, Columbus, OH 43216-1049; (614) 644-3020
- **Oklahoma**, Department of Environmental Quality, 1000 NE 10th Street, Suite 250, Oklahoma City, OK 73117-1212; (405) 271-1400
- **Oregon**, Department of Environmental Quality, 811 SW Sixth Avenue, Portland, OR 97204-1390; (503) 229-5696
- **Pennsylvania**, Department of Environmental Protection, 400 Market Street, Harrisburg, PA 17105; (717) 783-2300
- **Rhode Island**, Department of Environmental Management, 235 Promenade Street, Providence, RI 02908-5767; (401) 277-6800
- **South Carolina**, Department of Health and Environmental Control 2600 Bull Street Columbia, SC 29201; (803) 734-5000
- **South Dakota**, Department of Environment and Natural Resources, 523 East Capitol Avenue, Pierre, SD 57501; (605) 773-3151
- **Tennessee**, Department of Environment and Conservation, 401 Church Street, L&C Tower, Fifth Floor, Nashville, TN 37243-1535; (615) 532-0111
- **Texas**, Texas Natural Resource Conservation Commission 12100 Park 35 Circle, Austin, TX 78711-3087; (512) 239-1000
- **Utah**, Department of Environmental Quality, 168 North 1950 West, Salt Lake City, UT 84114; (801) 536-4400
- **Vermont**, Agency of Natural Resources, 103 South Main Street, Waterbury, VT 05671; (802) 241-3636
- **Virginia**, Virginia Office of Natural Resources, Department of Environmental Quality, 629 East Main Street, P.O. Box 10009, Richmond, VA 23240-0009; (804) 698-4000
- **Washington**, Department of Ecology, P.O. Box 4775, Olympia, WA 98504-7600; (360) 407-6300
- **West Virginia**, Division of Environmental Protection, 10 McJunkin Road, Nitro, WV 25143; (304) 759-0515
- **Wisconsin**, Department of Natural Resources, 101 South Webster Street, P.O. Box 7921, Madison, WI 53707; (608) 266-2621
- **Wyoming**, Department of Environmental Quality, 122 West 25th Street, Cheyenne, WY 82002; (307) 777-7391

Each state has offices that deal with air, water, land, and other environmental issues. Each state also has a Web site that can be accessed directly or through the U.S. EPA Web site: *www.epa.gov*. Some states have their own version of federal regulatory agencies, which may impose stricter standards than the federal agencies. California, for example, has its own OSHA (occupational health and safety agency). State agencies have the right to enforce stricter regulations than the federal regulations but may never be more lenient than the federal agency. Some major cities also have environmental protection departments, which may apply local regulations to a metal finishing facility, along with the local sewer treatment facility.

A brief discussion of the major regulations affecting metal finishing facilities follows. Note that the Surface Finishing Industry Council (SFIC), under a grant from the U.S. EPA, has published a comprehensive regulatory compliance manual that covers all regulations that apply to the metal finishing industry. This manual can be purchased through NAMF, AESF, or MFSA. The following discussion highlights only some of the major ramifications of the regulations.

## Major Regulations Affecting Metal Finishers

### Clean Water Act (CWA)

To meet the requirements of the Clean Water Act, metal finishing facilities have installed and operate pretreatment systems for the removal of heavy metals and other toxins such as cyanide prior to discharge. Because these pretreatment systems are sized and priced based on flow rates, the industry employs water conservation and recycle/recovery methods.

### Clean Air Act (CAA)

The Clean Air Act requires the metal finishing industry to remove certain air pollutants from its exhaust into the atmosphere. Regulations typically target specific hazardous air pollutants (HAPS). For example, the emissions of hexavalent chromium from hard chromium, decorative chromium plating, and aluminum anodizing (in a hexavalent chromium solution) are strictly controlled under regulations promulgated by the U.S. EPA under authority of the Clean Air Act. This act has also resulted in regulations limiting the emissions of solvents from vapor degreasers.

### Resource Conservation and Recovery Act (RCRA)

The Resource Conservation and Recovery Act (RCRA) requires the metal finishing industry to treat and dispose of or recycle wastes generated from metal finishing operations and pretreatment systems in an environmentally sound manner. This act defines a hazardous waste and places strict requirements on the storage, handling, and disposal of hazardous

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waste. A commonly generated hazardous waste produced by a wastewater treatment system in most metal finishing facilities is called F-006 under RCRA regulations. With a few exceptions, such as sludge from wastewater treatment of noncyanide zinc-plated over steel substrates, F-006 is a “listed” hazardous waste. This means that the waste can never be disposed of as nonhazardous, even if it contains no hazardous ingredients. The RCRA regulations do have provisions for “delisting” such wastes, but the procedure is complicated and expensive at the present time.

EPA is studying procedures that may make delisting a more viable option in the near future. The benefit of generating a nonhazardous waste is lower disposal cost (typically 80 percent less expensive to dispose) and lower environmental liability (lower liability insurance costs). Numerous other wastes are generated by metal finishing facilities and are hazardous by “characteristic.” This means the waste contains leachable toxic metals, cyanide, sulfide, high acidity, high alkalinity, or has other hazardous properties. Such wastes must also be stored, handled, and disposed of as hazardous.

## **CERCLA/SARA**

The Comprehensive Environmental Response, Compensation & Liability Act of 1980/Superfund Amendments and Reauthorization Act (CERCLA/SARA) require companies in the metal finishing industry to become much more cautious about where and to whom they send their wastes for disposal or recycling.

The Emergency Planning & Community Right-to-Know Act (EPCRA) requires metal finishing facilities that manufacture or otherwise use certain chemicals or chemical compounds above a stated threshold annual quantity to review and reduce the quantities of hazardous chemicals on hand at any time, reducing potential danger to their neighbors. On an annual basis, certain compounds used by a metal finishing facility above a stated cut-off must be reported to the regional office of the U.S. EPA or a designated state agency. As required by state and federal regulations, emergency plans (called contingency plans) and lists of chemicals on hand must be filed with the local fire department, emergency response agencies, and other appropriate entities.

Local fire departments and villages may also restrict the amount of certain chemical products a metal finisher may have on hand at the plant at any time, even if proper safe storage facilities are available.

## **OSHA**

The Occupational Safety and Health Administration (OSHA) regulations require companies in the industry to change to less toxic processes and to ventilate their processes in order to protect their workers from chemical exposures. OSHA publishes permissible exposure limits (PELs) that may not be exceeded by any process for any given 8-hour working period. A list of PELs is available from any OSHA office or from its Website, [www.osha.gov](http://www.osha.gov).