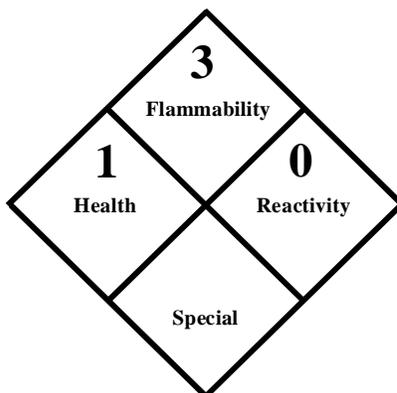


Acetone Regulations and Pollution Prevention: What You Should Know

Although manufacturers in Ohio will no longer be required to submit a TRI Form R for acetone, you should evaluate acetone use closely since it is highly flammable and remains a regulated substance in other programs.

Considerations for Use

The greatest danger regarding acetone use is that it poses a serious fire hazard. Although acetone is an excellent solvent and is relatively non-toxic, it is **extremely flammable**. It has a flash point of -18°C (0°F). If handled improperly, acetone may be a dangerous fire risk.



National Fire Protection Association
Hazard Rating

Regulatory Changes

Under the Clean Air Act, the United States Environmental Protection Agency (U.S. EPA) recently determined that acetone has negligible ground-level ozone-forming properties and exempted it from some air pollution regulations.

Ohio EPA is considering similar changes in state air pollution rules. Also, U.S. EPA removed acetone from the Toxics Release Inventory (TRI), the database for reporting toxic chemical uses, releases, and transfers from certain manufacturing facilities. TRI reporting is no longer required for acetone. Due to these regulatory changes, acetone has emerged as an attractive alternative to other, more toxic chemicals.

Industries are increasingly using or considering the use of acetone as a substitute for hazardous air pollutants and ozone-depleting substances listed in the Clean Air Act Amendments of 1990. Acetone is listed in the U.S. EPA's SNAP (Significant New Alternatives Program) as an acceptable substitute to ozone depleting compounds for several uses including metal, electronics and precision cleaning applications. Be aware, however, that using acetone requires important safety precautions. It also remains a regulated substance in other programs.



Acetone Regulations and Pollution Prevention

Some Regulations and Guidelines Affecting Acetone Use

Air Requirements

- Acetone is not a hazardous air pollutant (HAP) under the federal Clean Air Act Amendments of 1990. In addition, acetone is not subject to the Risk Management Plan (RMP) requirements under section 112(r) pertaining to the prevention of accidental releases. U.S. EPA has also granted acetone VOC-exempt status. In Ohio, the Ohio EPA Division of Air Pollution Control (DAPC) plans to exempt acetone from VOC classification. Under ORC 3745.111 (H)(4), acetone remains an organic compound (OC) subject to annual air pollution control fees. *For information on air pollution regulations contact the Ohio EPA, Division of Air Pollution Control, Engineering Section, at 614/644-2270.*

Toxic Release Inventory (TRI)

- Under the Emergency Planning and Community Right-to-Know Act (EPCRA) 313 and chapter 3751 of the Ohio Revised Code (ORC), acetone is no longer TRI-reportable. *For TRI information, contact the Ohio EPA, TRI program technical staff, at 614/644-4830.*

Clean Water Act (CWA)

- Acetone is not a priority pollutant under the federal CWA, but its discharge into wastewater would still need to be addressed on a case-by-case basis. Local sewer authorities may also have regulations affecting discharge. *For information on permitting, call the Ohio EPA, Division of Surface Water, Industrial Permit Section, at 614/644-2001.*

Spills

- Under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), section 103(a), you must report acetone spills of 5,000 pounds or more to U.S. EPA. Under EPCRA (40 CFR, Part 355) and ORC 3750.06, you must report acetone spills of 5,000 pounds or more to Ohio EPA. *For more information, contact the Division of Emergency and Remedial Response, at 800/282-9378 (Ohio only) or 614/224-0946.*

Carcinogenicity

- Acetone is not regulated as a known or suspect carcinogen based on research conducted by the The National Toxicology Program (NTP).

Resource Conservation and Recovery Act (RCRA)

- Facilities must comply with RCRA regulations. The spent or unused acetone that a facility generates or discards may be a hazardous waste in Ohio. *For RCRA information contact the Ohio EPA, Division of Hazardous Waste Management, RCRA Technical Assistance Unit, at 614/644-2917.*

Occupational Safety and Health Administration (OSHA)

- OSHA has set a time-weighted average of 1,000 ppm in workplace air for an 8-hour workday over a 40-hour workweek. Personal protective equipment may be necessary when handling. In addition, acetone is subject to OSHA's Hazard Communication Standard (29 CFR 1910.1200). Requirements of this standard include that employers must provide information (including Material Safety Data Sheets or MSDS) to their workers on the hazardous chemicals in the workplace. *For more information call OSHA, Columbus, at 614/469-5582.*

Acetone Regulations and Pollution Prevention

Some Regulations and Guidelines Affecting Acetone Use

Storage

- Under EPCRA (40 CFR, Part 370) and ORC 3750.08, if you are storing, on any day of the year, 10,000 pounds or more of acetone, you must report this information to your local fire department, local emergency planning committee (LEPC), and state emergency response commission (SERC in Ohio, c/o Ohio EPA). *For more information, contact the Division of Emergency and Remedial Response, Chemical Emergency Prevention Unit at 614/644-2260.*

National Fire Protection Association (NFPA)

- NFPA has rated acetone as an NFPA 704 level 3 flammability hazard. State building codes and fire codes are based on NFPA guidelines. Since these codes vary according to location, it is important to contact your local governing bodies for information relevant to your area. *For more information call the NFPA, Quincy, MA, at 800/344-3555.*

Public Utilities Commission of Ohio (PUCO)

- In Ohio, the PUCO regulates shipments of acetone as a hazard level 3 (flammable) substance, and transport of the chemical requires shipping papers. *For more information call the PUCO Transportation Department, Columbus, at 614/466-3191.*

What Are Your Options?

Alternative solvents

Ohio EPA's Office of Pollution Prevention (OPP) encourages facilities to first consider changes that will eliminate the need for cleaning, such as process changes, equipment modifications, material substitutions, or product redesigns or reformulations. Once cleaning requirements have been minimized, facilities should consider using a less toxic material or cleaning method for each specific cleaning application. Before converting to an alternative solvent, study the product's Material Safety Data Sheet (MSDS) which provides information about physical proper-

ties, safety precautions, and waste disposal. Carefully evaluate the product to ensure that its use complies with environmental and other regulations. Just as acetone has emerged as an attractive alternative to other more toxic chemicals, vendors are formulating new products that may prove more effective than acetone and safer to use.

Source reduction and recycling

The most cost-effective and environmentally acceptable method of addressing the hazards of acetone is source reduction — avoiding use and

generation from the outset. Source reduction techniques should be investigated before examining the feasibility of recycling spent acetone. As a second choice, recycling acetone can reduce disposal and air emission fees, reduce the amount of purchased virgin acetone, and save money. Ohio EPA encourages those interested in acetone recycling to focus on the ability of the solvent recycling process to meet regulatory compliance and to prevent pollution.

Acetone Regulations and Pollution Prevention

Case Studies

Lantz Lenses

A manufacturer of eyeglass lenses in St. Cloud, Minnesota, Lantz Lenses used acetone to remove abrasive pads from lens-grinding tools. In 1993, Lantz Lenses purchased 1,050 pounds of acetone and generated approximately 2,300 pounds of acetone contaminated waste and 920 pounds of acetone emissions. After examining their process, Lantz Lenses determined that the abrasive pads could be removed by manual scraping alone (at no increased labor cost), eliminating the need for acetone altogether and saving hundreds of dollars per year.



Lantz Lenses used acetone to remove abrasive pads from

Chem-Pruf Door

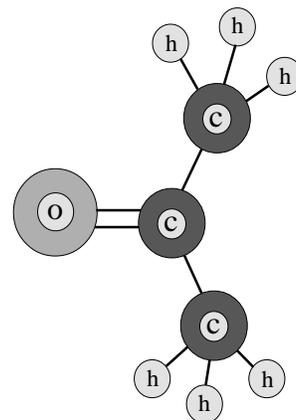
A manufacturer of fiberglass-reinforced plastic doors and windows located in Brownsville, Texas Chem-Pruf Door implemented an acetone management program to better use acetone. The program includes good operating practices such as ensuring lids on acetone containers are kept closed to limit evaporative losses. In addition, the facility has changed to purchasing acetone in tote bins to



eliminate drums and reduce the risk of spills. Spent acetone is also collected at workstations daily and distilled for reuse. Still bottoms remaining from distillation are reused as fillers in new products. Through the acetone management program, Chem-Pruf Door has reduced acetone emissions by 13,000 pounds a year and saved on the purchase of new acetone by 2,000 gallons a year.

Acetone Facts

- Chemical formula: CH_3COCH_3
- Organic solvent classified as a ketone
- Often used for cleaning and degreasing
- Evaporates quickly
- Soluble in water
- Colorless liquid with a sweetish smell and distinctive taste
- Used in the manufacture of plastics, fibers, drugs, and other chemicals
- Also known as dimethyl ketone, 2-propanone, beta-ketopropanone



Acetone Regulations and Pollution Prevention

Case Studies

More information

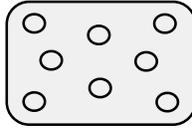
Picken's Plastics

Located in Ashtabula, Pickens Plastics is a manufacturer of fiberglass products, regularly used acetone to clean tools. This worked well, but led to several fires. To reverse this trend, in 1993 Picken's Plastics switched to a solvent blend and highly concentrated detergent (a water-based cleaner) as alternatives to acetone. The alternative solvents cost more than acetone, but Picken's has determined that these costs are justifiable. Both the detergent and the solvent blend are much less flammable than acetone because of their higher flash points. The facility's insurance costs have decreased, and employee safety has significantly improved. Since the switch, Picken's Plastics has experienced no fires, and no production time has been lost. Picken's Plastics has a permit to discharge the detergent wastewater to the municipal sewage treatment plant, and the solvent vendor disposes of the spent solvent blend in accordance with local, state, and federal requirements.



Hickory Springs

A manufacturer and fabricator of flexible slabstock polyurethane foam (FPF), Hickory Springs developed and patented a process that uses acetone as the auxiliary blowing agent (ABA) in place of the ozone depleting substances CFC -111 and methyl chloroform and the hazardous air pollutant (HAP) methylene chloride. ABAs soften, reduce density and, most importantly, remove the potentially dangerous heat of reaction in the foaming process. Acetone is listed as an acceptable ABA substitute in the U.S. EPA's Significant New Alternatives Program (SNAP). By making the engineering modifications that allow the use of the flammable acetone, Hickory Spring's foam plant in Ft. Smith, Arkansas now uses and emits only 150 tons of acetone annually as the ABA, compared to 260 tons emitted in 1990 using the HAP methylene chloride. As a result, Hickory Springs converted all six of its foam production facilities to using acetone as the only ABA and has multiple licensees of the process.



The Office of Pollution Prevention (OPP) has several publications available that address topics regarding acetone, and is available to search various sources for answers to your questions. Contact the OPP Technical Assistance Unit at 614/644-3469 for further information or visit OPP's home page on the World Wide Web at <http://www.epa.state.oh.us/opp> In addition, a good way to start learning about existing solvent alternatives is to connect to Enviro\$en\$e on the World Wide Web at <http://es.epa.gov/> Another source of information is the Solvent Alternatives Guide (SAGE), which is also found via the Internet under Enviro\$en\$e. Set your WWW pointer to <http://es.epa.gov/ssds/sage.html> for more information. SAGE is also available from the U.S. EPA Technology Transfer Network (TTN), which can be reached by means of modem at 919/541-5742.

Acetone Regulations and Pollution Prevention

References and Resources

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Arlington, VA 22209

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Minnesota Technical Assistance Program. "Fact Sheet: Reducing volatile emissions in the fiber reinforced plastics industry." <http://es.epa.gov/techinfo/facts/mpca/emision.html> (21 August 1996).

Office of Waste Reduction Services, State of Michigan. "Fact Sheet: Considerations in selecting a commercial (off-site) solvent recycling service." <http://es.epa.gov/techinfo/facts/michigan/michfs14.html> (26 August 1996).

Texas Natural Resources Conservation Commission. Pollution Prevention Ideas From Texas Industries -A Case Study Compendium. November 1994.

This is one in a series of documents Ohio EPA has prepared on pollution prevention. For more information, call the Office of Pollution Prevention at (614) 644-3469.

The Office of Pollution Prevention was created to encourage multi-media pollution prevention activities within the state of Ohio, including source reduction and environmentally sound recycling practices. The Office analyzes, develops, and publicizes information and data related to pollution prevention. Additionally, the Office increases awareness of pollution prevention opportunities through education, outreach, and technical assistance programs directed toward business, government, and the public.

Office of Pollution Prevention WWW address: www.epa.state.oh.us/opp