



# Federal Facilities Toxic Release and Reduction Initiatives Fact Sheet

## Background

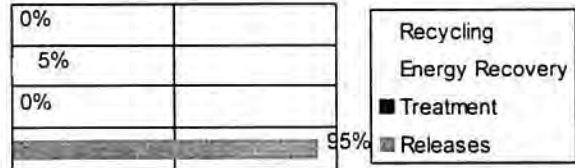
Executive Order 12856, entitled "Federal Compliance with Right-To-Know Laws and Pollution Prevention Requirements", was signed by President Clinton on August 3, 1993. The primary objectives of EO 12856 are to encourage Federal facilities to:

- Develop pollution prevention plans to reduce toxic releases by 50%;
- Collect and report data on the quantity of hazardous materials stored, used, and released at the facility;
- Ensure public access to use and release information.

Federal facilities are required to submit annual TRI reports starting in 1995 for data collected in 1994.

## AMMONIA

### 1995 Waste Management Distribution



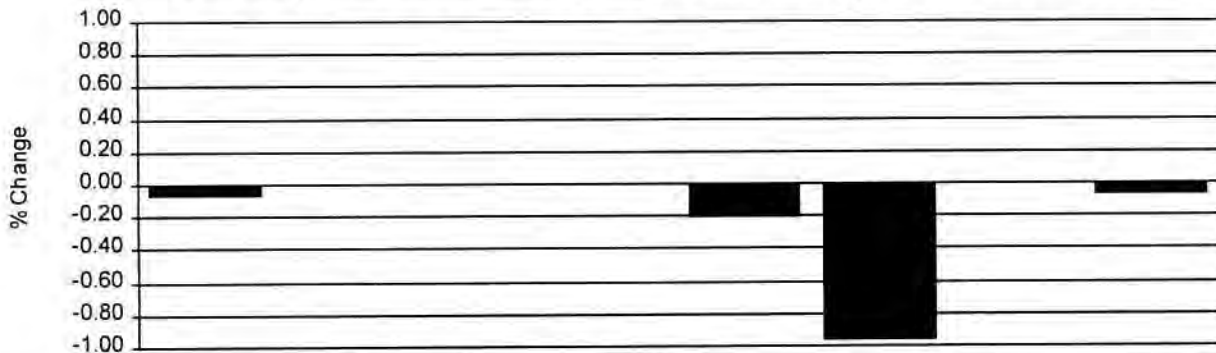
## Approach

A study was undertaken to analyze Federal facility TRI data for 1994 and 1995 to: 1) determine the most commonly used and released chemicals; 2) identify currently used pollution prevention (P2) approaches and on-going pollution prevention research and development to lower or substitute the use of a chemical; and 3) identify potential RD/transition needs. As of January 1998, fifteen chemical Fact Sheets have been developed. Please refer to the back page to order Fact Sheets for other chemicals.

This Fact Sheet contains two charts and four main sections:

- The charts represent the waste management distribution and percent change of TRI reported quantities.
- Chemical Profile section.
- Identified and used P2 approaches section.
- On-going P2 research and development section.
- P2 research and development/transition needs section.

### TRI Reported Quantities - Percent Change 1994 and 1995



TRI Reporting	Releases	Recycling		Energy Recovery		Treatment		Releases plus Off-site Treatment
		On-Site	Off-Site	On-Site	Off-Site	On-Site	Off-Site	
1994 (lbs)	640,223	0	0	0	42,692	11,200	0	640,223
1995 (lbs)	589,891	0	0	0	33,800	430	0	589,891
% Change	-8%	0%	0%	0%	-21%	-96%	0%	-8%

## SYNONYMS

AQUEOUS AMMONIA

AQUA AMMONIA

ANHYDROUS AMMONIA

## COMMON USES IN THE U.S.

#<http://mail.odsnet.com/TRIFacts#>

- Ten US Forest Service facilities reported using ammonia as a fire retardant for extinguishing fires. The two other largest single reporters were US DOE Energy Technology, Simi Hills, CA (accounted for approximately 10% of the 1994 total reported ammonia releases) and the USDA Agricultural Research Center, Clay Center, NE (accounted for over 75% of the 1994 total). Holston Army Ammunition Plant, Kingsport, TN, uses ammonia in ammunition production. The US DOE Naval Petroleum facility (Tupman, CA) probably uses ammonia in its petroleum refining operations.
- 85% of the ammonia used in the U.S. is for fertilizers. 9.2% of the ammonia is used for commercial and military explosives and in the manufacture of fibers and plastics. Ammonia is used for specific applications in a wide range of industries including metal working, rubber, air pollution control, wastewater treatment, petroleum refineries, food and beverage, leather production, and pharmaceuticals. Ammonia is also used in blue print machines and refrigeration systems (source: Kirk-Othmer. Encyclopedia of Chemical Technology. 4th edition. John Wiley & Sons. 1995).

## ACUTE HEALTH HAZARDS

#<http://mail.odsnet.com/TRIFacts#>

- Ammonia is a severe irritant of the eyes, respiratory tract, and skin. Exposure to and inhalation of concentrations of 2500 to 6500 ppm causes severe corneal irritation, dyspnea, bronchospasm, chest pain, and pulmonary edema, which may be fatal (source: Proctor, N. H., Hughes, J. P., and Michael L. Fischman. Chemical Hazards of the Workplace. 2nd edition. Van Nostrand Reinhold. 1989).

## CHRONIC HEALTH HAZARDS

#<http://mail.odsnet.com/TRIFacts#>

- Case reports have documented chronic airway hyperreactivity and asthma, with associated obstructive pulmonary function changes following massive ammonia exposures.

## COMMON P2 INITIATIVES

#<http://mail.odsnet.com/TRIFacts#>

- Careful storage and handling practices. Careful management practices can reduce accidental releases of fertilizers to the environment.
- Material substitution. Alternatives to anhydrous ammonia and ammonium nitrate fertilizers are commercially available.

*Additional information regarding chemical hazards and access to Material Safety Data Sheets can be reached through the Agency for Toxic Substances and Disease Registry web page: <http://atsdr1.atsdr.cdc.gov.8080/> - refer to ToxFAQs.*

## FEDERAL FACILITIES REPORTING

## COMMON USES OF: AMMONIA

Federal Facilities Reporting in both 1994 and 1995	6	AGRICULTURE
Federal Facilities Reporting Only in 1994	13	
Federal Facilities Reporting Only in 1995	3	

## POLLUTION PREVENTION APPROACHES CURRENTLY IN USE

## AGRICULTURE

- All 50 States and several territories have established some form of Farm\*A\*Syst program through their agricultural extension services offices to educate farmers (and other audiences) on how their activities may affect drinking water quality. Farm\*A\*Syst is supported through a handshake agreement between the USEPA, USDA's Cooperative State Research Education and Extension Service, and Natural Resource Conservation Service. The program has produced a variety of publications, slide shows, software programs, self-assessment guides, and other tools describing best management practices for crop production. Best management practices for fertilizers include: Inventory control – buy and store as little fertilizer as possible; Storage facility – fertilizer should be stored in a building with a concrete floor that is more than 100 feet away from a well or surface water; Spill prevention – liquid fertilizer should be stored in a building with a curbed containment pad; Security – the storage building should be fenced, locked, and separated from all other activities; Mixing/loading – fertilizer preparation occurs more than 100 ft from a well or surface water; spills should be cleaned up immediately; Mixing/handling equipment – install check valves on mixing/handling systems if the equipment is connected to a water supply to prevent fertilizer from back flowing; Loading – the equipment operator should monitor the process of filling liquid fertilizer application equipment to prevent leaks, spills, or overflows; Buffer zone – maintain a buffer zone of at least 100 ft between fertilizer application areas and a well or surface water; and Packaging wastes – reduce the number of empty containers by using products in mini-bulk or returnable containers or by using custom application. (source: Mississippi State University Extension Service. "Handling and Storing Fertilizers". no date)



## POLLUTION PREVENTION APPROACHES CURRENTLY IN USE

### AGRICULTURE

- EPA and the USDA have launched several technical assistance programs and voluntary partnership initiatives to promote the adoption of environmentally sound agricultural management practices. Agriculture in Concert with the Environment (ACE) is a joint EPA and USDA grant program to promote the adoption of sustainable agriculture practices and reduce the use of highly toxic herbicides and other pesticides. AgSTAR is a voluntary EPA, USDA, and DOE sponsored program that promotes cost-effective methods for reducing methane emissions through manure management. The main focus is on the swine and dairy industries. The field of sustainable agriculture focuses primarily on developing and disseminating new techniques and management practices to minimize the environmental impacts associated with agriculture and livestock production. Information on alternative crop production methods, fertilizers, pesticides, and other subjects is available in the extensive body of technical literature devoted to sustainable agriculture.

## ON-GOING POLLUTION PREVENTION RESEARCH AND DEVELOPMENT

### AGRICULTURE

Information on current R&D projects related to developing alternatives for commercial fertilizers such as ammonia-based products is available in the sustainable agriculture literature.

## POLLUTION PREVENTION RESEARCH AND DEVELOPMENT / TRANSITION NEEDS

### AGRICULTURE

- It appears as though USDA's pollution prevention need can be resolved either through current techniques and commercially available products or on-going R&D. No additional R&D seems necessary to resolve the need.

### Federal Facilities Which Reported for Both 1994 and 1995

Facility	1994 Release+ Off-site Treatment	1995 Release+ Off-site Treatment	Percent Change
U.S. FOREST SERVICE, HURLEY, NM	39	0	-100%
U.S. AIR FORCE ELMENDORF, ELMENDORF AFB, AK	45,000	0	-100%
U.S. AIR FORCE PLANT 04 TX, FORT WORTH, TX	1,000	0	-100%
U.S. AIR FORCE PLANT 44 AZ, TUCSON, AZ	2,900	0	-100%
U.S. ARMY, KINGSPORT, TN	2,100	2,600	24%
U.S. ARMY RADFORD ARMY, RADFORD, VA	0	25,000	100%
U.S. BUREAU OF LAND MANAGEMENT, GRAND JUNCTION, CO	30	0	-100%
U.S. DOE ENERGY TECHNOLOGY, SIMI HILLS, CA	64,715	28,153	-56%
U.S. DOE NAVAL PETROLEUM, TUPMAN, CA	2,131	31,268	1367%
U.S. FOREST SERVICE, BOISE, ID	50	0	-100%
U.S. AIR FORCE, TINKER AFB, OK	23,738	70,035	195%
U.S. FOREST SERVICE, HEMET, CA	71	0	-100%
U.S.D.A. BELTSVILLE, BELTSVILLE, MD	0	16,200	100%
U.S. FOREST SERVICE, LA GRANDE, OR	48	0	-100%
U.S. FOREST SERVICE, LANCASTER, CA	0	95	100%
U.S. FOREST SERVICE, MC CALL, ID	34	0	-100%
U.S. FOREST SERVICE, MISSOULA, MT	41	0	-100%
U.S. FOREST SERVICE, REDDING, CA	53	0	-100%
U.S. FOREST SERVICE, REDMOND, OR	20	0	-100%
U.S. MARINE CORPS RECRUIT, PARRIS ISLAND, SC	0	0	0%
U.S. TVA, MUSCLE SHOALS, AL	12,100	13,620	13%
U.S.D.A. AGRICULTURAL RESEARCH, CLAY CENTER, NE	486,120	402,920	-17%
U.S. FOREST SERVICE, CHESTER, CA	33	0	-100%

*If you have additional information regarding an identified or used P2 approach, on-going P2 research and development, or any P2 research and development/transition needs, please notify Will Garvey, US EPA, 1200 Pennsylvania Avenue, NW, Ariel Rios Building, 3rd Floor, Washington, DC 20004-2403, or fax (202) 501-0069.*