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United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Research Triangle Park, NC 27711

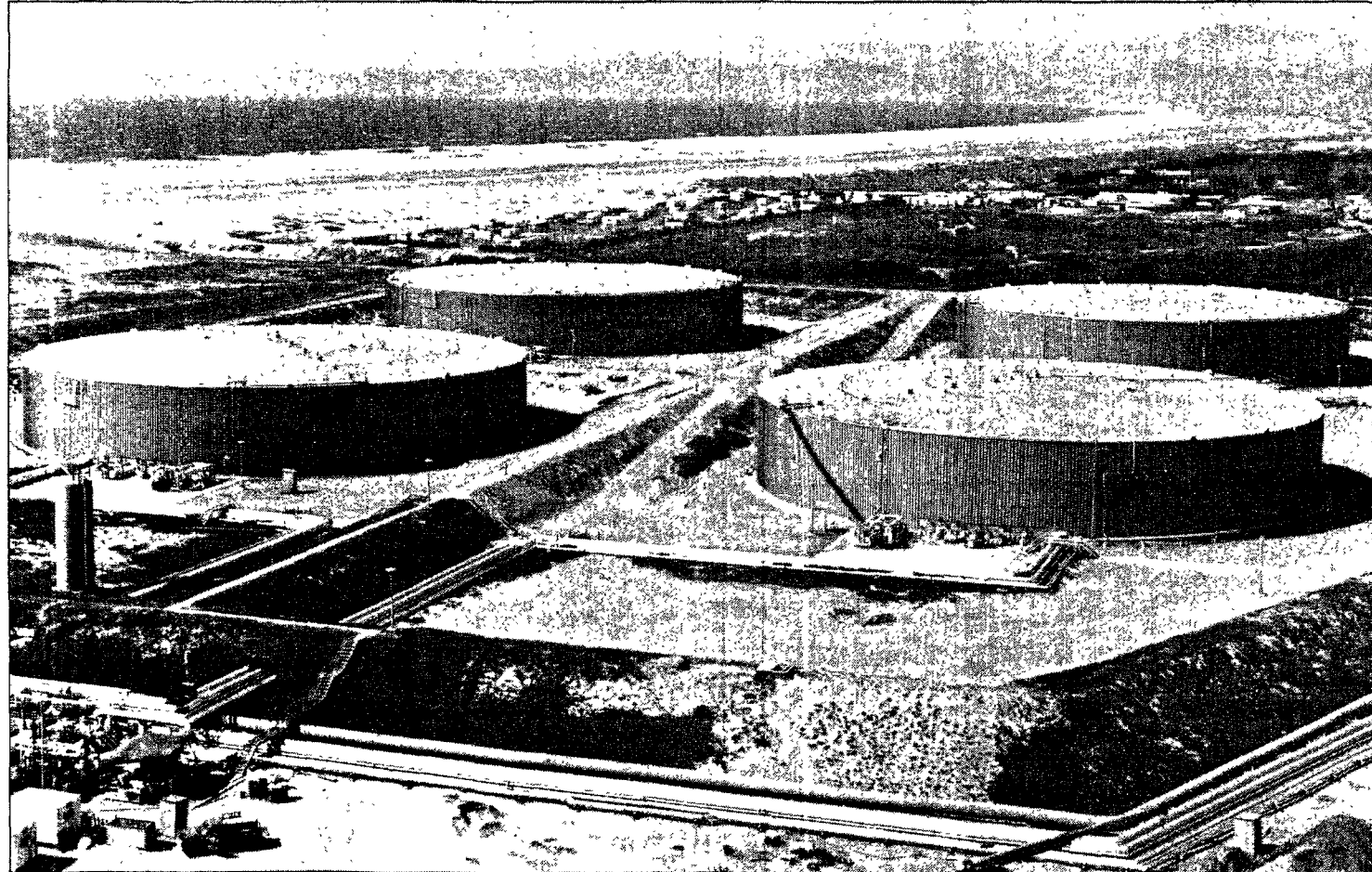
April
1980

New Source Performance Standards



Petroleum Storage Tanks

Final Regulation



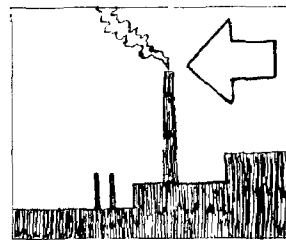
Regulatory Authority

The 1977 Clean Air Act Amendments call for a comprehensive national program to reduce air pollution and improve air quality. Section 111 of the Act requires the U.S. Environmental Protection Agency (EPA) to establish uniform emission standards for selected new, modified, and reconstructed stationary sources. These new source performance standards (NSPS) are intended to minimize new air pollution problems. Once an NSPS becomes final, it must be

reviewed by EPA every four years to assess improvements that have been made in emission control technology for the source under regulation. NSPS recently promulgated for petroleum liquid storage tanks are based on standards EPA originally published in 1974. The new standards, which reflect the use of improved emission control technology for petroleum storage tanks, are discussed here.

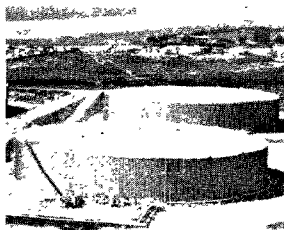
Emission Limits

On March 8, 1974, EPA published regulations to reduce the amount of smog-forming pollutants escaping into the atmosphere from storage tanks containing petroleum liquids. These pollutants, volatile organic compounds (VOC), are also found in engine exhausts, gasoline vapors, or in vapors from cleaning solvents or other similar products. VOC react photochemically with other atmospheric substances to form smog, a complex air pollutant that has been linked to respiratory impairments and eye irritations. Smog also damages plant tissue, and causes the deterioration of rubber and other substances.



VOC vapors escaping from petroleum liquid storage tanks are difficult to measure in terms of mass emission rates. Because conventional measurement techniques cannot be used to accurately gauge these emissions, storage tank performance standards are based on equipment specifications and maintenance requirements rather than on emission limit criteria.

Affected Sources



About 4.5 percent of stationary source VOC emissions may be traced to petroleum storage tanks, which are used to store petroleum, condensate and other finished or intermediate products manufactured at petroleum refineries.

The new performance standards affect tanks that 1) storage capacities greater than 40,000 gallons

and 2) contain liquid with a true vapor pressure greater than 1.5 pounds per square inch. Only tanks for which construction began after May 18, 1978, fall under these NSPS. The standards exempt tanks with storage capacities less than 420,000 gallons if the tanks are used to store only crude oil or natural gasoline before transfer to other facilities.

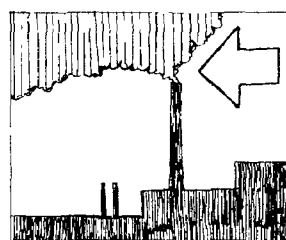
An estimated 2,600 tanks, located at refineries, terminals, and other facilities throughout the United States, will be affected by these regulations.

Control Options

In compliance with Clean Air Act mandates that require NSPS to be reviewed every four years, EPA reassessed the storage tank standards originally promulgated in 1974. New NSPS reflect the use of VOC emission controls more effective than those outlined in the 1974 standards.

To effectively reduce VOC emissions, the regulations require owners and operators of external floating roof tanks to install double seal systems. This type of system incorporates a primary seal and secondary seal to achieve emission reduction. Different types of primary seals may be installed, including metallic shoe seals; liquid-mounted, foam-filled seals; liquid-mounted, liquid-filled seals; or vapor-mounted foam-filled seals. Any type of secondary seal may be used, as long as it completely covers the space between the roof edge and tank wall. The 1974 regulations had required installation of only one seal to close the gaps between the roof edge and tank wall.

Owners and operators of petroleum storage tanks must minimize the size of gaps between the seals and tanks walls by meeting the following requirements: 1) gaps between the tank wall and a liquid-mounted



or metallic shoe primary seal should measure no more than 212 cm² per meter of tank diameter, or 10.0 in² per foot of tank diameter, 2) gaps between the tank wall and a vapor-mounted primary seal should measure no more than 21.2 cm² per meter of tank diameter, or 1.0 in² per foot of tank diameter, and 3) gaps between the tank wall and a secondary seal can be no more than 21.2 cm² per meter of tank diameter, or 1.0 in² per foot of tank diameter.

Control technology for tanks with fixed outer roofs is the same as that outlined in the 1974 regulations, which require these tanks to be equipped with internal floating roofs and a single seal for reducing emissions from gaps where the tank wall and floating roof do not meet. Vapor recovery and return or disposal systems may also be used if they are designed to reduce VOC emissions by 95 percent. Tanks which store liquids with vapor pressures greater than 11.1 pounds per square inch must be equipped with vapor recovery and return or disposal systems.

EPA is charged by Congress to protect the Nation's land, air and water systems. Under a mandate of national environmental laws focused on air and water quality, solid waste management and the control of toxic substances, pesticides, noise and radiation, the Agency strives to formulate and implement actions which lead to a compatible balance between human activities and the ability of natural systems to support and nurture life

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