Significant Environmental Benefits

The final "Cluster Rule" achieves significant reductions in the amount of pollutants in the wastewater discharged by the mills affected by this rule:

- 96% reduction in dioxin and furan discharges to water
- 96% reduction in dioxin and furan loading to sludges (for land disposal)
- 99% reduction in chloroform

The final rule calls for changes that significantly reduce the amount of pollutants emitted to the air from pulp and paper mills. These changes include:

- 59% reduction of all toxic air pollutants
- 47% reduction in reduced sulfur (the primary source of objectionable odors)
- 49% reduction in volatile organic compounds (precursors to smog)
- 37% reduction in particulate matter

Significant Human Health Benefits

Reducing the amount of pollutants released to the environment benefits public health and the environment. As a result of this rule, 73 rivers and streams will become cleaner due to toxic pollution reductions; ultimately all dioxin-related fish consumption advisories associated with the 96 pulp and paper mills affected by this action will be eliminated; and dioxin-related risks for Native Americans and others who eat more than average amounts of fish will be lowered.

**Developed in conjunction with the Pulp and Paperworkers Resource Council*

Environmental Protection Agency
401 M Street, SW (4301)
Washington, DC 20460

United States Environmental Protection Agency
Office of Water 4301
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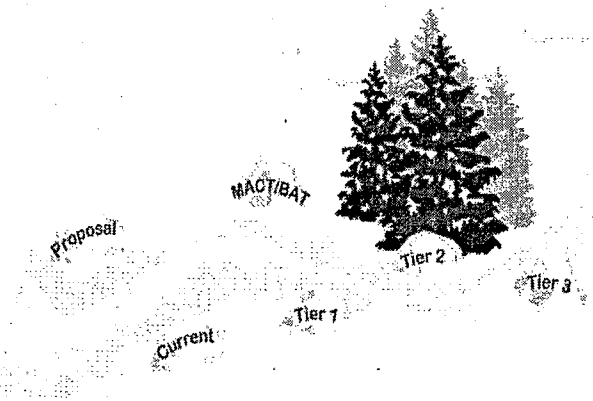
Pulp and Paper Cluster Rule Incentives Program



COVER

Overview

The combined air and water "cluster rule" for the pulp and paper industry protects human health and the environment by reducing toxic pollutant releases to the air and water. The technology standards in the rule cut toxic air pollutant emissions by almost 60 per cent from current levels and virtually eliminate all dioxin discharged from pulp, paper, and paperboard mills into rivers and other surface waters. An important feature of this rule is a new incentives program that encourages individual mills to adopt advanced pollution control technologies. Adoption of advanced pollution control technologies will lead to further reductions in toxic pollutant discharges beyond the water discharge limits set in the rule.

Advanced Technology Incentives Program Objectives

The primary objective of Advanced Technology Incentives Program is to encourage individual mills to install advanced pollution prevention technologies or make process changes that will reduce the release of toxic pollutants to the environment beyond the limits set by the Pulp and Paper Cluster rule. This program gives pulp and paper mills a platform to advance the research and development of technologies and processes that will provide greater environmental protection.

The Industry

American pulp and paper mills are an important employer. They are one of the nation's largest industries made up of approximately 565 manufacturing facilities located in 42 states and employing over 200,000 people.

The Pulp and Paper Cluster Rule regulates toxic air pollutants in 155 of the 565 pulp, paper, and paperboard mills in the United States, and it regulates toxic water discharges from 96 of those 155 mills.

Pulp Production Process

Wood consists of two primary components: cellulose and lignin. Cellulose, which is the fibrous component of wood, is used to make pulp and paper. Lignin is the "glue" that holds wood fibers together. Pulping is the process which reduces wood to a fibrous mat by separating the cellulose from the lignin.

Pulping processes are generally classified as chemical, mechanical, or semi-chemical. The three chemical pulping methods are known as kraft, sulfite, and soda. Of these, the kraft and sulfite processes are most common.

Elemental Chlorine-Free Bleaching

Elemental Chlorine Bleaching is the process currently in place at some existing bleaching plants, and uses chlorine (Cl_2) and hypochlorite to brighten the pulp. When elemental chlorine and hypochlorite react with the lignin, they form chlorinated pollutants such as chloroform, dioxins, and furans in the wastewater stream. Elemental Chlorine-Free Bleaching (ECF) replaces chlorine with chlorine dioxides as a bleaching agent and hyperchlorite is no longer used. The use of ECF bleaching results in decreased levels of chlorinated pollutants in the wastewater stream.

Pollution Prevention

These combined air and water rules achieve greater pollution prevention and process optimization than either the air or water regulation alone could achieve. For example, some air requirements which reduce toxic air pollutants also reduce mill wastewater toxic pollutant loadings and some of the technologies used to meet water limits further reduce air emissions.

Incentives to Surpass Baseline Requirements

The Advanced Technology Incentives Program is designed to achieve greater pollutant reductions than those achieved by installing technology that only helps mills meet the baseline requirements of the rule. In return for more advance pollution prevention and environmental protection controls, mills enrolled in this program will be granted additional time to incorporate new technologies or change manufacturing processes. These mills are allowed to choose a pollution prevention technology that is best for them and compliance schedules are based on the type of advanced pollution prevention technology installed.

Capital Investment

EPA estimates that the industry will need to invest approximately $1.8 billion in capital expenditures and approximately $277 million per year in operating expenditures to comply with this rule.