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 **EPA FACT SHEET**

## **PROPOSED EFFLUENT LIMITATIONS GUIDELINES AND NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR THE PRODUCTION OF PULP, PAPER, AND PAPERBOARD -- OVERVIEW**

### **BACKGROUND**

The pulp and paper industry is one of the nation's largest industries. The U. S. Environmental Protection Agency (EPA) estimates that there are approximately 565 manufacturing facilities located in 42 states. These facilities comprise either integrated pulp and paper mills, where pulp is manufactured on-site from virgin wood fiber, secondary fiber, or non-wood fiber, and paper or paperboard products are produced from the pulp; and non-integrated paper mills where only paper or paperboard products are manufactured from purchased pulp or pulp produced elsewhere. The facilities are owned by about 200 companies with combined 1989 sales revenues of \$65 billion for the industry. Pulp and paper mills consume large amounts of wood products and, in 1992, generated over one and one-half trillion gallons of wastewater. Although the quality of discharges is improving, production results in large amounts of pollutants discharged to the air and to surface waters. The industry also generates large amounts of sludge as a product of waste treatment.

The proposed regulation will provide important improvements in protecting human health and the environment by reducing toxic and hazardous pollutant releases to all media. EPA estimates the integrated rule will result in annual reductions of:

- 120,000 tons of hazardous air pollutants
- 716,000 tons of volatile organic chemicals (air)
- 2,800 tons of toxic water pollutants
- 200,000 tons of conventional water pollutants
- Dioxin/furan in discharges to water and in sludge

### **INTEGRATED REGULATIONS**

For the first time, EPA is proposing an integrated regulation that includes guidelines and standards to control the release of pollutants to the water and to the air from one industry. The regulations are being proposed jointly to provide greater protection to human health and the environment and to reduce industry's cost of complying with the pollution control requirements. By jointly proposing the air and water requirements, EPA is promoting the concept of pollution prevention and at the same time enabling the industry to more effectively plan compliance strategies. The integrated approach emphasizes the multimedia nature of pollution control and enables each facility to consider all requirements in determining pollution control approaches. If implemented, the proposed rule would greatly reduce the amount of pollution entering the

environment through a combination of:

- Technologies that prevent many pollutants from being created in the first place;
- Technologies that control the discharge of the pollutants that are created; and
- Requirements for good "housekeeping" practices

### **ENVIRONMENTAL CONTROLS**

Congress requires EPA to regulate discharges to the air and water and has provided specific legislation on how industrial discharges are to be regulated. Under the authority of the Clean Water Act, EPA develops effluent guidelines for major industries. These guidelines are used for setting discharge limits for specific facilities that

discharge to surface waters or municipal sewage treatment systems. Under the authority of the Clean Air Act, EPA develops emission standards for air pollutants for major sources of air pollutants.

## DISCHARGES TO WATER

EPA is proposing effluent limitations to control toxic, conventional, and nonconventional pollutants at both existing and new facilities that discharge wastewater either directly to a surface water or to a municipal sewage treatment system. The effluent guidelines portion of the proposed regulation will apply to mills in the U.S. that produce pulp, paper, or paperboard as a final product.

## EMISSIONS TO AIR

EPA is proposing National Emission Standards for Hazardous Air Pollutants (NESHAP) that will apply to existing and new sources of air emissions. These industry-specific standards limit air emissions of any of 189 hazardous air pollutants.

The NESHAP portion of the proposed regulation applies only to the pulping, bleaching, and evaporation areas of approximately 160 mills in the U.S. that produce pulp by chemically processing virgin wood as the fiber source. These 160 mills are a subset of the mills subject to the effluent guidelines. EPA plans to propose NESHAP for the recovery loop and combustion sources at these mills in late 1994 and promulgate all of the standards in late 1995.

## DEVELOPMENT OF THE REGULATIONS

The proposal date is tied to a consent decree involving EPA, the Environmental Defense Fund, and the National Wildlife Federation. The consent decree requires the EPA to propose effluent limitations for 104 pulp and paper mills to address discharges of dioxin and furan (which are both known carcinogens) by October 31, 1993.

The regulations were developed by EPA through an open process involving meetings with environmental groups, the regulated community, and other interested parties. Five public meetings were held between September 1992 and June 1993. EPA will be soliciting comments for 90 days (from the date the proposed regulation appears in the Federal Register).

## REQUIREMENTS OF THE REGULATION

Although EPA established the proposed effluent limitations and the air emission standards based upon specific technologies, mills may choose their own control technologies and

process change combinations to meet these regulations. The proposed effluent guidelines portion of the regulations separates the pulp and paper industry into 12 groups, known as subcategories, based upon either the method in which the pulp is created or the type of paper or paperboard product produced.

## EFFLUENT GUIDELINES FOR CONVENTIONAL POLLUTANTS

The proposed effluent guidelines set limitations on *conventional pollutants* for all 12 subcategories of the industry. Conventional pollutants controlled include biochemical oxygen demand and total suspended solids. This portion of the regulation will require all mills to meet conventional pollutant limitations at least as good as the level that the best 50 percent of the mills in each subcategory are currently achieving.

## EFFLUENT GUIDELINES FOR TOXIC AND NONCONVENTIONAL POLLUTANTS

The proposed effluent guidelines set limitations on *specific toxic and nonconventional pollutants* for the 12 industry subcategories. These limitations are based on the best available technology economically achievable.

Limitations on *nonconventional pollutants* (such as adsorbable organic halides, chemical oxygen demand, and color) will apply at the point where the effluent is discharged from the mill property.

*Toxic pollutants* (such as chloroform, methylene chloride, and some chlorinated phenolic compounds) will have limitations set in the effluent from bleach plants, which are located inside mill areas. Effluent limitations for two toxic pollutants, chlorinated dioxins and furans, are included in the proposed regulations for four subcategories. These pollutants will have limitations on the end-of-pipe effluent where the effluent is discharged from the property.

In addition to limits on in-process pollutants, mills that use chemicals in the pulping area will be required to implement good housekeeping procedures to prevent and contain spills.

## EFFLUENT GUIDELINES - POLLUTION PREVENTION

The proposed effluent limitations for toxic compounds are based on process changes in the pulping and bleaching areas on these mills. Changes in the pulping area include improved uniformity of wood chips and better washing of the pulp prior to bleaching. These changes reduce the amount of bleaching chemicals required.

Changes in the bleaching area include removing the lignin from the washed pulp using oxygen and partially or totally substituting elemental chlorine with other chlorinated chemicals. These changes would reduce the amount of discharges of dioxins, furans, chlorinated phenolics and other compounds in discharges.

## **AIR EMISSION STANDARDS**

The air emission standards address the emission points that offer the best opportunity for integration with the effluent guideline; that is, noncombustion points at mills that chemically pulp wood fiber. They would not, however, regulate all hazardous air pollutant emission points within the source category.

The major hazardous air pollutants (HAP's) emitted from the processes that would be controlled by the standards include methanol, hexane, toluene, methyl ethyl ketone, chlorine, chloroform, formaldehyde, acrolein, and acetaldehyde.

Many of the HAP's emitted from the pulp and paper source category are also volatile organic compounds (VOC's). These substances are precursors to smog formation. Although the air emission standards do not require control of VOC emissions, the control technologies upon which these standards are based also significantly reduce VOC emissions. Air emissions of total reduced sulfur (TRS) compounds from pulping processes and process wastewater streams are also controlled along with the HAP's and VOC's. TRS compounds are a source of foul odors.

## **MACT FLOOR**

Emission standards for new and existing sources promulgated under the Clean Air Act must represent the maximum degree of emission reduction achievable, or the MACT. The Clean Air Act establishes minimum levels, often referred to as the MACT floor, for NESHAP.

EPA relied on an industry survey to determine which control technologies were being used in the industry and the extent to which they are being used. EPA used this information to establish the MACT floor for existing and new sources.

## **COST AND IMPACT OF THE RULE**

The total annualized cost to the industry is estimated by EPA to be \$600 million. EPA

estimates that the capital investment cost (which include purchase price of capital equipment and installation services) to meet the proposed standards will be approximately \$4 billion. Annual operation and maintenance costs associated with the capital equipment installed to meet the standard will be \$400 million.

EPA's economic analysis suggests that the rule will be affordable for most companies. EPA estimates that the compliance costs could result in 11-13 plant closures (est. 5% of the total number of plants) and between 2,800 -10,700 job losses (est. <1%-4% of the total number of jobs in the industry). The impact on consumers will be small for most products. The greatest market price change for consumers may be an increase of less than 3% for uncoated free sheet (i.e., copy and tablet paper).

## **ENERGY IMPACTS**

According to the U.S. Department of Energy, the pulp and paper industry is the fourth largest industrial user of energy, accounting for almost 10% of total U.S. industrial energy consumption. Compliance with the proposed regulations is anticipated to increase the industry's energy usage by less than one percent. Among the reasons for this increase are the energy requirements for process equipment upgrades, treatment system upgrades, and equipment upgrades that will be necessary. However, compliance is anticipated to partially offset the increase in energy usage industry-wide because of the energy value of some of the recovered material.

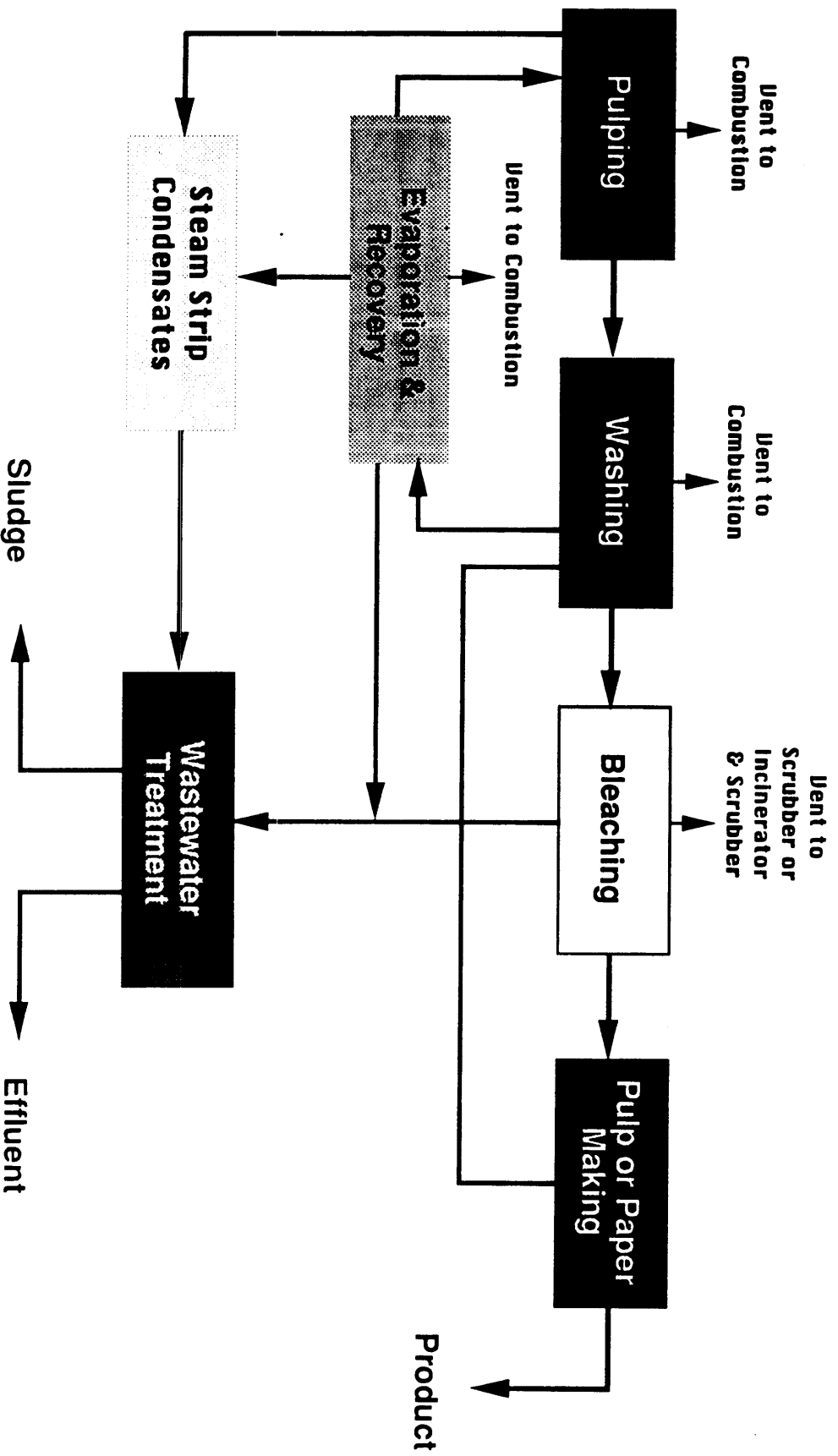
There are several other energy-related impacts associated with the proposed rule. Among the most important are reductions in the volume of water discharged at many facilities and the mass of wastewater treatment sludge generated. The estimated reduction in water usage for the industry is 1.2 billion liters per year. The amount of industrial sludge produced as a result of implementation of the rule will increase by 52,000 metric tons per year.

The quantity of bleaching chemicals used in the industry is likely to change. Quantities of hypochlorite, chlorine, and sodium hydroxide are expected to decrease while quantities of chlorine dioxide, oxygen, hydrogen peroxide, and ozone are expected to increase. However, overall chemical usage in the industry would decline resulting in cost savings.



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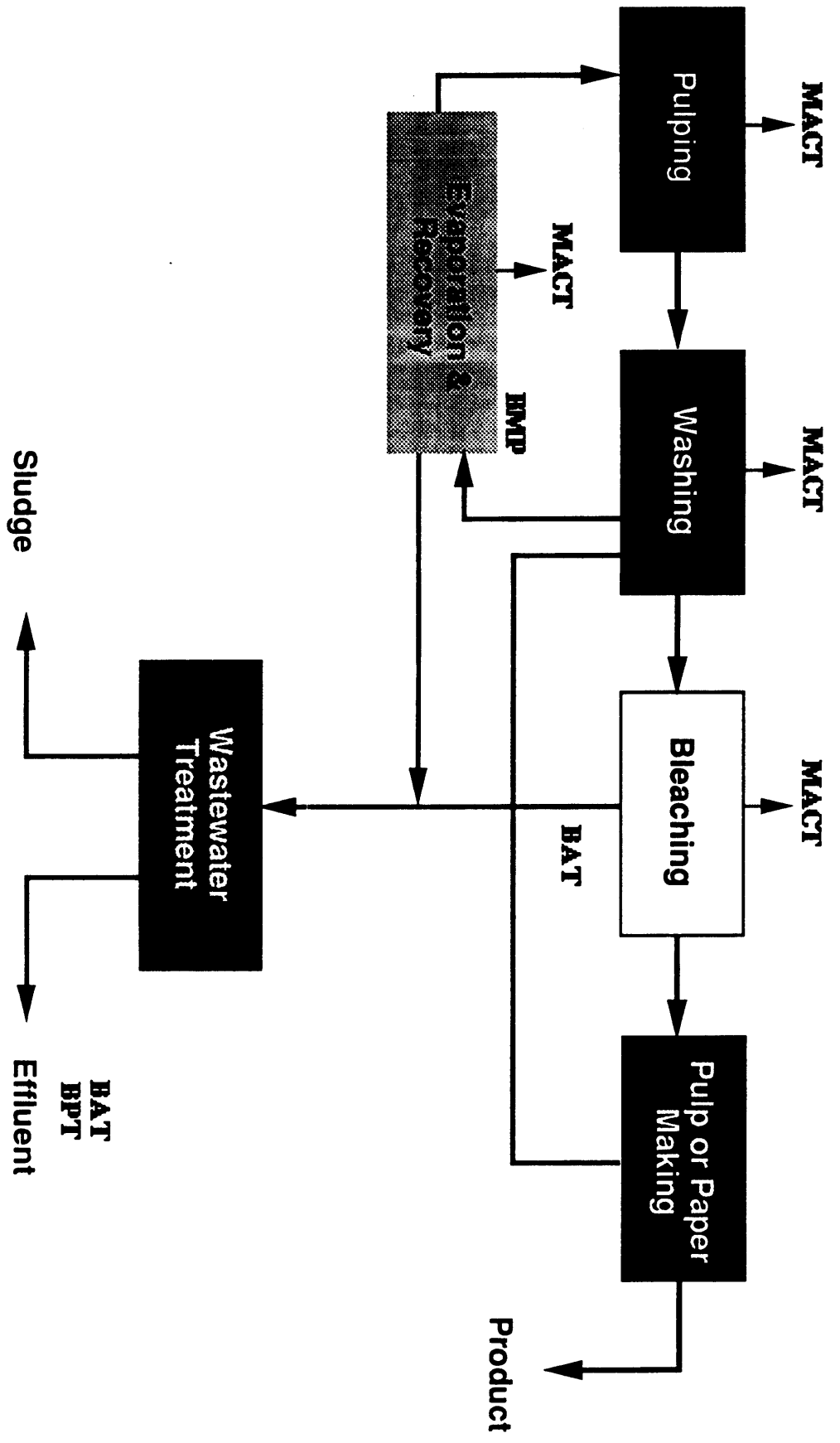
***AIR Control Technologies***





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**Points of Compliance**







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***Process Changes:***

*Extended Delignification  
Black Liquor Spill Prevention  
Oxygen Delignification  
Improved Washing*

*Chlorine Dioxide Substitution  
Split Chlorine Addition  
Elimination of Hypochlorite  
Enhanced Extraction*

