AP-42 Section 10.8
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Report Sect. 2
Reference 10

RESEARCH TRIANGLE INSTITUTE

Center for Environmental Analysis

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MEMORANDUM

TO: Eugene Crumpler, the EPA/ISB, MD-13

FROM: Betty Gatano

SUBJECT: Draft Industry Profile

Attached is a draft industry profile for the wood treatment industry. The industry profile, which was previously called Section 9.1 of the BID, will be used for subsequent environmental and economic impacts. Much of the information in the industry profile is contained in Chapter 2 of the BID. However, the profile also includes a brief history of the wood treatment industry, a description of sources of emissions and emission controls, and a discussion of the trends and growth of the wood treatment industry. Please review and comment on the profile. The profile will be revised according to your comments.

cc: Al Vervaert
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1.0 INTRODUCTION

1.1 PURPOSE

This report presents a profile of the wood treatment source category for use in subsequent environmental and economic analyses.

1.2 BACKGROUND

The Clean Air Act Amendments (CAAA) of 1990 provide for the regulation of hazardous air pollutant (HAP) emissions from major sources of pollution. Major sources are defined as stationary sources of pollution that emit 10 tons of a single HAP or 25 tons of a number of HAPs. Section 112(b) of the CAAA lists the 189 HAPs. The EPA has determined that wood treatment processes that use organic preservatives may reasonably be expected to emit several of the listed HAPs including pentachlorophenol, naphthalene, polycyclic organic matter, and others in quantities sufficient to designate them as major sources. As a consequence, the portion of the wood treatment industry that uses organic preservatives was on the list of source categories selected for regulation and is in the group of categories for which final regulations are expected to be promulgated by November 1997.

Emissions standards promulgated under Section 112(d) of the CAAA are to be technology-based and are to require the maximum degree of emission reduction determined to be achievable by the Administrator. These standards have been termed the maximum achievable control technology (MACT). Regulations will require all major sources in the source category to conform to MACT standards.

1.3 ORGANIZATION

The remaining sections of this report describe the characteristics of the industry associated with production of wood products treated with organic preservatives. In Section 2.0, a summary of the profile is presented. Section 3.0 presents a short history of wood treatment production, followed by a description of the wood treatment processes used today. Section 4.0 characterizes the pollutant emissions from these processes. Section 5.0 characterizes the emission control systems used on the individual processes. Section 6.0 presents data covering wood treatment production and growth potential.

2.0 SUMMARY

According to the 1991 statistics for the wood treatment industry, 83 creosote wood treatment facilities produced 87.61 million cubic feet of wood and consumed 70.1 million gallons of creosote, and 63 PCP facilities produced 43.49 million cubic feet of wood and consumed 22.4 million pounds of PCP.[1]

Only limited data is available on emissions from wood treatment facilities. Results from emissions tests indicate that emissions from the treated wood storage at wood treatment facilities may be at major source levels. The HAPs of concern include but are not limited to the following: PCP, naphthalene, dibenzofuran, biphenyl, and other types of polycyclic organic matter.

Based on the responses to the information collection request (ICR) sent to creosote and PCP wood treaters, only a few facilities have any type of emission controls. Eight creosote facilities have aqueous scrubbers, two have condensers, and one has an incinerator to control emissions from work and storage tanks and vacuum system exhausts. Only one PCP facility has a packed-bed scrubber to control emissions from the process.[2]

3.0 CHARACTERIZATION OF THE WOOD TREATMENT INDUSTRY

3.1 HISTORY

The modern wood preservation era in the U.S. began in the late 1800's with the construction of the first creosote wood preservation plant, which treated ties and other stock material for the railroad industry. Much of the initial expansion of the wood treatment industry resulted from the growth of railroads and utilities.[3]

The technology used in the wood treatment industry has not changed greatly throughout this century. The first commercial wood treatment process, known as the Bethell or full-cell process, was patented in 1838. The next major advancements in technology occurred in the early 1900's with the development of the Rueping and Lowry, empty-cell processes in 1902 and 1906, respectively. Both of these processes are modifications of the earlier, Bethell process. Today, the majority of wood treatment facilities still use one of these three processes to treat wood.[3]

Similarly, the major wood preservatives used in the U.S. were all patented before 1940. Creosote is the oldest modern preservatives and was used as far back as the early 1800's. Pentachlorophenol (PCP) was patented in 1931, and chromated copper arsenate (CCA) was patented in 1938.[3] PCP and CCA were developed because a need arose for a cleaner, easier to paint product, not having the appearance or odor of creosote-treated wood. PCP and CCA both provided protection from decay while producing a product that could be used in many applications where creosote treated products could not.[4]

Wood treatment plants are characterized by the type of preservative, the method of conditioning used to remove moisture from green wood, and the method of treatment used at the facility. Although the majority of wood treaters currently use CCA, the CCA processes are not subject to MACT development. Regardless of the preservative used, the equipment and treatment methods are similar throughout the wood treatment industry.

3.2 CONDITIONING

Except for a few treatment processes, the presence of water in the cells of green wood will retard or prevent the absorption of preservative into the wood. Therefore, the water in the cell must be removed to allow for preservative absorption. Moisture removal can be accomplished by using artificial conditioning or by allowing the wood to air season.[5] The method of conditioning chosen depends largely on the location of the wood preserving facility, the treatment method employed at the facility, and the type of wood treated. At facilities where rapid turnover of stock is required, space is limited, or humid climatic conditions exist, conditioning methods other than air seasoning are necessary.[6] The most common methods of artificial conditioning include steaming-and-vacuuming, Boultonizing, and kiln drying. Of these methods, kiln drying is the fastest growing method, due to the increased use of water-borne preservatives over the past twenty years.[5]

3.2.1 Steaming-and-Vacuum Process. In this process, wood is steamed in the treating cylinder for several hours, usually at a maximum temperature of 245°F.[7] Following steaming, a vacuum is applied to the cylinder. Results of steaming-and-vacuuming vary depending on the species of wood treated. Presently, the use of this process is limited mainly to southern pines and other softwoods.[8]

Steaming-and-vacuum has many advantages over other methods of conditioning. Steam heats wood faster than other heating techniques. It is easily applied and requires no special equipment. Steam temperatures can be controlled easily, and the wood is left clean after steaming is complete.[9] Additionally, steaming can increase preservative permeability in some species of wood.[7]

Steaming-and-vacuum also has disadvantages. Wood surfaces are exposed to the actual steam temperature during the entire steaming period, and the temperatures are considerably higher than the temperatures used in other conditioning methods.[5] As a result, precautions are necessary when steaming-and-vacuuming is used with some species of wood.[8]

3.2.2 The Boulton Process. In the Boulton process, a vacuum is used to remove moisture from the wood. Initially, the treating cylinder is filled with enough preservative to cover the charge. The temperature of the preservative is maintained while a vacuum is applied to the cylinder. In this case, the heated preservative keeps the wood hot while the vacuum lowers the boiling point of the water in the wood and causes part of the water to evaporate.[9] The vacuum during the boiling period usually reaches 22 inches or more, and the average temperature of the preservative typically ranges from 180° to 220°F depending upon the type of wood being treated and its intended use. The entire Boulton process may last anywhere from 10 to 36 hours.[8]

While originally intended for use with pure creosote, the Boulton process also can be employed with creosote solutions or any preservative oil that will not foam or cause problems during the conditioning period. However, the Boulton process is entirely unsuitable for water-borne preservatives because the water in the solution evaporates more easily than that in the wood.[8]

One advantage to the Boulton process is that the lower temperatures prevent damage in wood species susceptible to heat injury. Another advantage is that a greater moisture reduction can be obtained from the Boulton process than is possible with the steaming-and-vacuum process.[9] The chief disadvantages of the Boulton process are that it is suitable for oil-base preservative only, it often costs more than air-seasoning, it heats the wood more slowly than steaming, and it usually requires a considerably longer time than the steaming-and-vacuum process.[7]

3.3 PRESSURE PROCESSES

Wood preserving processes may be classified as either pressure or nonpressure processes. In pressure processes, wood is placed in the treating cylinder and impregnated with preservative by applying pressure. In nonpressure processes, the preservative is applied to the wood by brushing or spraying the preservative onto the wood or by dipping, soaking or steeping the wood in the preservative. Pressure treating methods account for the vast majority of wood treated annually.[8] Thus, only pressure processes are discussed in this section.

The wood preserving industry uses three basic methods for pressure treating wood; the Bethell, the Lowry, and the Rueping methods. The major difference between these three methods is in the initial air pressure in the cylinder as the cylinder is filled with preservative. In the Bethell method, a vacuum is applied and maintained on the cylinder as it is flooded with preservative. In the Lowry method, the treating cylinder is filled under atmospheric conditions. In the Rueping method, the cylinder is pressurized above atmospheric conditions, and the pressure is maintained while the cylinder is being filled.[10]

The reason for the different methods is to control the amount of preservative remaining in the wood after treatment. As the name implies, the Bethell or full-cell treatment method fills the wood cells with preservative in order to retain the maximum amount of preservative. Water-borne preservatives are almost always applied by this process. The full-cell method is only used with creosote when high preservative retentions are required, as in the protection of marine pilings.[6] The Lowry and Rueping are called empty-cell methods, and the objective of these methods is to reduce the amount of preservative needed for treatment while ensuring deep penetration of preservative. With the Lowry and Rueping methods, the initial air pressure in the cylinder is compressed and trapped within the cells of the wood when the cylinder is pressurized during treatment. After the pressurization, the compressed air in the cells expands and expels a large amount of preservative from the wood. Although these processes leave the cells of the wood almost empty, the cell walls are thoroughly treated.[6] The Rueping method produces the lowest final preservative retention, while the Lowry method results in intermediate retentions.[10] The Lowry and Rueping methods are commonly used to apply creosote and PCP to wood.

After the cylinder is filled, the remainder of the wood treatment process is similar for all three methods. Following preservative filling, pressure in the cylinder is increased, and the pressure is maintained until the wood will take no more preservative or until the desired retention is reached. Typically, the pressure period lasts from 1 to 6 hours. After pressurization is complete, the preservative is drained from the cylinder. A final vacuum is then applied to minimize dripping of preservative from the charge after it is removed from the cylinder.[6]

3.4 WOOD TREATMENT EQUIPMENT

Despite the numerous wood treatment preservatives, conditioning methods, and treatment processes, the equipment required for pressure treatment is similar throughout the wood treatment industry. Figure 1 shows the equipment used for pressure treatment at a typical wood treatment facility. This section presents an overview of the equipment used for pressure treatment.

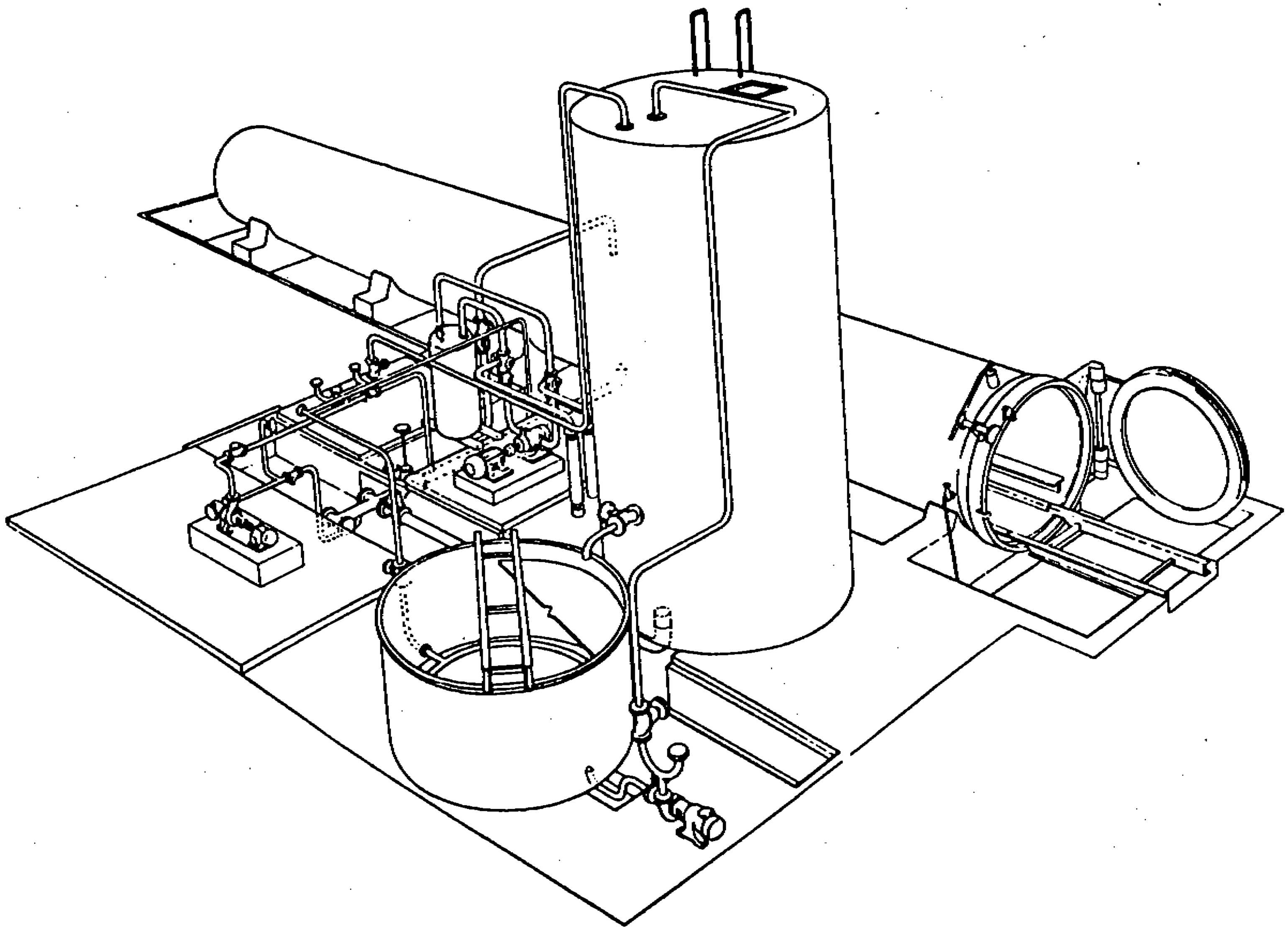

Figure 1. Layout of a conventional pressure treatment plant showing the treating cylinder, a storage tank, a preservative mixing tank (for water-borne preservatives only) pumps, and pipework.[8]

3.4.1 Storage Tanks and Work Tanks. A wood treatment plant requires several tanks for holding the preservative during different stages of treatment, and the size, number, and type of tanks depend on the preservative used. Most treatment plants have working tanks from which preservative is pumped to the treating cylinder and unused preservative is returned after treatment. Plants also often have separate tanks for receiving and storing fresh preservative. At facilities that treat with creosote or oil-borne preservatives, storage and work tanks are often heated. Additionally, these facilities require more numerous and larger tanks than facilities that use water-borne preservatives because water-borne preservatives are delivered in concentrated form and need less storage space.[6]

3.4.2 Treating Cylinders. Treatment cylinders or retorts are typically 6 to 9 feet in diameter and up to 150 feet or more in length and are built to withstand working pressures up to 250 Psi. Special tram cars move wood into and out of the cylinders on tracks that run into the cylinder.[11] At facilities that use preservatives that require heating during treatment, the cylinders are also equipped with steam coils mounted under the tracks or they have external heating units through which preservative is circulated.[6]

3.4.3 Vacuum Systems. Vacuum systems must be able to produce a vacuum of over 22 inches of mercury absolute on the cylinder. With creosote and oil-borne preservatives, the vacuum systems consists of a condenser and a condensate receiver followed by a vacuum pump or a steam jet ejector.[11] Collection, measurement, and separation of the condensate are especially important when the Boulton process is used to condition wood prior to treatment. Often a single vacuum system serves several treating cylinders, with the treating cycle in each cylinder staggered to prevent delays.[8]

3.4.4 Wastewater Treatment Systems. Wastewater resulting from wood treatment processes that use water-borne preservatives cannot be discharged because of regulations in the Clean Water Act.[3] With such processes, drips, spills, and contaminated rain water are collected in a recycle tank and reused.[6] Wastewater treatment systems for processes that use creosote or oil-borne preservatives often include some or all of the following equipment: oil-water separators, flocculation tanks, and thermal evaporator pans or biological treatment tanks.[12] The wastewater from these processes can be discharged indirectly into a publicly owned waste treatment plants or city sewers.[3]

4.0 CHARACTERIZATION OF POLLUTANT EMISSIONS

The primary sources of emissions at a wood treatment facility are from the work tanks, vacuum system exhausts, retort door openings, and the freshly treated wood. This section discusses the emissions associated with the wood treatment processes.

4.1 EMISSIONS FROM TREATED WOOD AND THE TREATMENT CYLINDER

For creosote facilities, emissions from treated wood immediately after removal from the retort usually exceed 60 percent opacity beyond the opaque water vapor breakoff point and continue to exceed 40 percent opacity for up to 20 minutes. Heat from the treated charge causes some of the lower boiling organic compounds to volatilize as aerosols, forming a dense white emission plume. Emissions of 60 percent opacity or more beyond the opaque steam plume from the open end of the retort continue throughout the time it takes to remove the treated wood and recharge the retort.[11]

In 1989, the EPA Region IX conducted a study that quantified emissions from all the sources at the Koppers Industries, Incorporated facility in Oroville, California. As a result, emissions from the creosoted treated storage area were estimated using ambient air monitoring and modeling. The results of the Region IX tests agree closely with the results from an another emission test conducted by Koppers Industries, Incorporated at the same location. In the Koppers test, representative poles were enclosed in a total temporary enclosure in order to contain and capture the emissions. The results of the two tests indicate that naphthalene was emitted at major source levels from the treated wood storage area at this facility. Thus, the test results indicate that emissions from the treated wood storage area are the largest source of HAPs from wood treatment facilities.[13,14]

4.2 EMISSIONS FROM THE VACUUM SYSTEM

Most emissions from wood treatment vacuum systems occur during wood conditioning and final vacuuming. Additionally, where one vacuum system serves more than one treating cylinder, the system is subject to cross contamination if different preservatives are used in the cylinders.[15]

As part of the EPA Region IX testing noted previously, emissions from the vacuum exhaust at the wood treatment facility in California were quantified. In the test, samples were taken during Boultonizing and during the final vacuum cycle of a creosote treatment cylinder. The results of the emission test are presented in Table 1.[13]

Table 1. Emissions from Vacuum System Exhaust[13]

HAP's	Boultonizing (lb/yr)	Final Vacuum (lb/yr)	Total Emissions (lb/yr)
Benzene	1.76	0.88	2.64
Toluene	1.98	0.88	2.86
Cresols	0.44	0.44	0.88
Naphthalene	18.5	84.5	103

In addition to the Region IX tests, at least two other emission tests have been conducted on the vacuum exhaust at other wood treatment facilities. One of the tests, which was conducted by Koppers Industries, Incorporated at their Susquehanna, Pennsylvania site, resulted in emissions comparable to those of the Region IX test.[16] The other test, conducted by the EPA Region X at the Wyckoff facility in Seattle, Washington, indicated much higher emissions. For example, naphthalene emissions from the vacuum exhaust were approximately 17,000 lbs per year per cylinder at the Wyckoff facility.[15]

4.3 EMISSIONS FROM WORK AND STORAGE TANKS

In addition to normal working and breathing losses, wood treatment work tanks are subject to preservative blow back. A blow back event occurs when the preservative is sent back to the work tank after conditioning or treatment. As a result, air in equilibrium with the preservative in the work tank is displaced.[17]

In the 1989 emission test conducted by Region IX, emissions from a creosote work tank at the facility were tested. In the test, samples were taken during the blow back period and during the final steam cycle. The final steam cycle involved heating the treated product by direct contact with pressurized steam for one hour. The emissions from the steam cycle were returned to the work tank and vented in the same manner as the blow back vapors. The results of the emission test are summarized in Table 3.[13]

Table 3. Emissions from Work Tank[13]

HAP's	Blow Back (lb/yr)	Steam Cycle (lb/yr)	Total Emissions (lb/yr)
Benzene	5.5	121	126.5
Toluene	6.2	135	141.2
Cresols	4.2	51.7	55.9
Naphthalene	69.5	1531.2	1600.7

4.4 EMISSIONS FROM WASTEWATER TREATMENT SYSTEMS

Only limited data is available on emissions from wastewater treatment systems at wood treatment facilities. The most significant source of emissions from wastewater treatment systems is from thermal pan evaporators which are used to concentrate creosote and oil-borne preservatives.[12]

5.0 CHARACTERIZATION OF EMISSION CONTROLS

The responses to the wood treatment industry ICR indicate that little has been done to control air emissions from wood treatment facilities. For creosote wood treaters, the three major types of emission controls are aqueous scrubbers, incinerators, and condensers. Eight creosote facilities use aqueous scrubbers. The scrubbers are either packed-bed scrubbers or venturi, spray scrubbers. Two creosote facilities use condensers to control process emissions, and one creosote facility uses an incinerator for emission control. Additionally, one PCP facility uses a backed-bed scrubber to control emissions from its process. Vacuum system exhausts and work and storage tank vents are the most commonly controlled emission sources.[2]

The control devices listed previously for PCP and creosote wood treatment facilities do not represent all the control devices found in the industry. Some facilities have site specific devices that cannot be applied to other facilities. For example, one PCP facility has a carbon filter on its hot well vacuum system and a bag house on its PCP flake storage. As reported in the ICR responses, no other PCP facility has a hot well vacuum system or uses PCP flakes. As a result, these air pollution control devices are not applicable to other wood treatment facilities.[2]

6.0 TRENDS AND GROWTH

6.1 WOOD TREATMENT CAPACITY AND ANNUAL PRODUCTION

The capacity of a given wood treatment facility depends, in part, on the size and quantity of treating equipment at the facility and the length of a treating cycle. Although the type of equipment is similar throughout the industry, the sizes and distribution of equipment vary. As a result, wood treatment facilities range from small, single-cylinder treaters to large, multi-cylinder treaters. The equipment capacity of a facility depends on both the size of the cylinders and the number of cylinders at the facility. A good indication of the equipment capacity of a facility is its total cylinder volume, which is the volume of cylinder multiplied by the number of cylinders at a facility. Table 3 lists all the wood treatment facilities responding to the ICR and shows the total cylinder volume for these facilities. The total cylinder volume limits the capacity of a wood treatment facility.

However, the capacity of a facility is also limited by the length of the facility's treatment cycle. Several variables affect the length of a treatment cycle including the method of conditioning, the type of product, and the product specifications. The most significant of these factors is the method of conditioning. Using artificial conditioning methods like steaming-and-vacuuming and Boultonization can as much as triple the length of a treatment cycle. Thus, facilities that treat more air seasoned or kiln dried wood will have a greater capacity than facilities that rely heavily on Boultonization or steaming. Additionally, the type of conditioning method a facility uses is often determined by external factors that the facility cannot control. For example, air seasoning increases the inventory of untreated wood at facilities. Because of the wood shortage that is currently facing the industry, many facilities cannot afford the large inventories associated with air seasoning, and they are forced to use more Boultonization and steaming-and-vacuuming than normal. Thus, the overall capacities of the facilities are reduced because of the longer treating cycle associated with the increased use of Boultonization.[18] Because the lengths of treatment cycles vary, the capacities of wood treatment facilities are difficult to establish.

Table 3 also shows the 1991 production reported by the facilities responding to the ICR. Reduced charge sizes are not used to limit production. Instead, production is limited by the number of days a facility treats wood, and facilities typically reduce the number of days of operation per year in order to reduce the amount of production.

6.2 TRENDS IN THE WOOD TREATMENT INDUSTRY

Table 4 shows the production of creosote and PCP treated wood from 1980 to 1991.[1,19] As seen in the table, the production of creosote and PCP treated wood declined over this period. From 1980 to 1991, creosote production fell by approximately 38 percent, while PCP production fell by 28 percent. This reduction is seen in almost all types of creosote and PCP treated products. Although not listed in the table, production of wood treated with water-borne preservatives rose by over 200 percent during the same period. - I think we should show CCA production.

According to the responses to the ICR, most wood treatment facilities that use organic preservatives are between 10 to 25 years old. Only two of the facilities are scheduled for replacement within ~~in~~ the next five years, and only four facilities have been constructed within the last five years. These four facilities are average to large in size, and three of the four use scrubbers to control process emissions.

Although treatment technology has not changed greatly over the past century, wood treatment facilities have undergone a change due to environmental regulations passed in the 1970's and 1980's. These changes include removal of wastewater impounding lagoons, construction of drip pads to contain drippage from freshly treated charges, construction of wastewater treatment units, and improved material handling practices.[20]

6.3 INDUSTRY GROWTH POTENTIAL

Most of the growth in the wood treatment industry over the past fifteen years has been due to the construction of water-borne preservative facilities. For example in 1984, 342 facilities used water-borne preservatives; 105 facilities used creosote; and 103 facilities used PCP. By 1991, 445 facilities were treating with water-borne preservatives, 83 facilities were treating with creosote, and 63 facilities were treating with PCP.[1]

A potential exists for future growth in the creosote and PCP portion of the wood treatment industry. The creosote treated tie market offers a great potential for increase, depending on the commitment of railroads to rebuild the nation's railway infrastructure. Additionally, increased production in poles over current levels is anticipated in the future because utilities are expected to upgrade their existing systems.[3]

Table 3. The 1991 Production of Facilities Responding to the ICR

Company	Location	Preservative	Total Cylinder Volume (ft3)	1991 Production (ft3)
Acme Wood Preserving, Incorporated	Princeton, WV	Creosote	UK	218,545
American Division of Powe Timber Company	Hattiesburg, MS	Creosote	3,110	320,000
Appalachian Timber Services, Incorporated	Charleston, WV	Creosote	UK	1,017,093
Arenson Timber Company, Incorporated	Steelville, MO	PCP	904	182,667
Arizona Pacific Wood Preserving Corporation	Eloy, AZ	Creosote	UK	200,200
Atlantic Wood Industries Incorporated	Peapock, GA	PCP	6,762	1,000,000
		Creosote	13,524	500,000
	Hainesport, NJ	Creosote	6,528	800,000
B&M Wood Products, Incorporated	Manor, GA	Creosote	1,413	143,000
Baldwin Pole & Piling Company, Incorporated	Bay Minette, AL	PCP	6,782	1,000,000
Bell Lumber & Pole Company	New Brighton, MN	PCP	6,129	1,496,216
Benton Creosoting Works	Benton, LA	Creosote	2,543	125,000
Birmingham Wood, Incorporated	Warrior, AL	Creosote	3,790	5,000,000
Frank Brooks Manufacturing Company	Bellingham, WA	PCP	2,315	518,709
Brown Wood Preserving Company, Incorporated	Northport, AL	Creosote	12,560	462,744
Burke-Parsons-Bowlby Corporation	Stanton, KY	Creosote	883	392,000
	DuBois, PA	Creosote	6,341	1,442,240
	Spencer, WV	Creosote	UK	1,180,000
Cahaba Pressure Treated Forest Products, Incorporated	Brierfield, AL	Creosote	UK	1,755,000
		PCP	UK	2,340,000

UK = Unknown
NR = Not Reported

Table 3. Continued

Company	Location	Preservative	Total Cylinder Volume (ft3)	1991 Production (ft3)
Cascade Pole and Lumber Company	Tacoma, WA	PCP	UK	376,896
		Creosote	UK	106,953
Colfax Creosoting Company	Pineville, LA	Creosote	UK	1,219,255
		PCP	UK	205,996
Conroe Creosoting Company	Conroe, TX	Creosote	13,176	623,000
		PCP	2,317	92,000
Cowboy Timber Treating Incorporated	Manderson, WY	PCP	UK	70,500
Dis-Tran Products, Incorporated	Pineville, LA	PCP	1,413	165,800
Durawood Treating Company	Alexandria, LA	Creosote	18,024	1,717,260
Easterday Tie & Timber Company	Mayfield, KY	Creosote	7,630	940,628
Garland Creosoting Company	Longview, TX	Creosote	3,589	203,590
General Timber Incorporated	Sanford, NC	Creosote	3,674	163,315
General Wood Preserving Company, Incorporated	Leland, NC	PCP	8,462	1,400,000
Glenville Wood Preserving Company	Glenville, GA	Creosote	1,922	125,000
Gordon Red Lumber Company	Brookhaven, MS	Creosote	3,435	NR
Hart Creosoting Company	Longview, TX	Creosote	5,934	129,650
Holcomb Creosote Company	Yadkinville, NC	Creosote	1,256	NR
Hughes Brothers, Incorporated	Seward, NE	PCP	3,052	681,741
Huxford Pole and Timber Company, Incorporated	Huxford, AL	Creosote	UK	100,000
		PCP	UK	1,000,000
Idaho Pole Company	Bozeman, MT	PCP	7,235	254,344

UK = Unknown
NR = Not Reported

Table 3. Continued

Company	Location	Preservative	Total Cylinder Volume (ft3)	1991 Production (ft3)
International Paper Company	Derrider, LA	Creosote	25,168	1,600,000
	Joplin, MO	PCP	12,360	3,029,000
	Wiggins, MS	PCP	11,907	2,400,000
J. H. Baxter & Company	Long Beach, CA	PCP	13,780	500,000
	Weed, CA	Creosote	6,030	38,734
	Eugene, OR	Creosote	4,409	153,667
		PCP	6,782	858,147
J. H. Baxter & Company	Arlington, WA	PCP	14,570	600,000
Julian Lumber Company	Antlers, OK	Creosote	UK	630,000
Kerr McGee Chemical Corporation	Madison, IL	Creosote	22,002	3,596,624
	Indianapolis, IN	Creosote	17,079	1,981,532
	Springfield, MO	Creosote	10,154	2,047,000
	Columbus, MS	Creosote	15,072	2,826,437
	The Dalles, OR	Creosote	25,385	2,887,000
	Avoca, PA	Creosote	11,540	1,312,000
	Texarkana, TX	Creosote	28,269	4,078,000
Koppers Industries, Incorporated	Montgomery, AL	Creosote	12,911	2,013,208
		PCP	12,911	2,629,747
	North Little Rock, AR	Creosote	22,044	4,147,689
	Oroville, CA	Creosote	12,410	856,359
	Denver, CO	Creosote	18,811	1,058,149
	Gallesburgh, IL	Creosote	4,522	1,187,078
	Guthrie, KY	Creosote	10,154	3,622,340
	Grenada, MS	Creosote	11,022	1,413,170
		PCP	8,196	1,284,274

UK = Unknown
NR = Not Reported

Table 3. Continued

Company	Location	Preservative	Total Cylinder Volume (ft3)	1991 Production (ft3)
Koppers Industries, Incorporated (continued)	Montgomery, PA	Creosote	21,102	1,862,685
	Florence, SC	PCP	15,273	1,844,574
		Creosote	21,601	1,819,890
	Salem, VA	Creosote	21,102	3,332,401
	Superior, WI	Creosote	10,951	1,181,567
	Green Spring, WV	Creosote	15,231	2,265,648
L.D. McFarland Company	Sandpoint, ID	PCP		945,987
	Eugene, OR	PCP	11,154	1,047,452
Leo Hicks Creosoting Company, Incorporated	Alto, TX	Creosote	UK	NR
Lufkin Creosoting Company	Lufkin, TX	Creosote	13,027	675,000
Madisonville Wood Preserving Company	Madisonville, LA	Creosote	4,961	257,866
Manor Timber Company, Incorporated	Manor, GA	Creosote	1,978	83,780
Mellott Wood Preserving Company, Incorporated	Needmore, PA	Creosote	4,308	750,000
Mixon Brothers Wood Preserving Company	Idabel, OK	Creosote	5,692	250,000
Missouri Wood Treating Company	Raymondville, MO	PCP	UK	1,309,687 (bf) Oeser Co.
The Oeser Company	Bellingham, WA	PCP	6,029	350,000
Pacific Wood Treating Corporation	Ridgefield, WA	Creosote	UK	449,871
		PCP	UK	612,596
Pacific Sound Resources	Seattle, WA	Creosote	28,700	762,631
		PCP	5,740	166,335
Pacific Wood Preserving, Corporation	Bakersfield, CA	Creosote	4,808	213,000

UK = Unknown
NR = Not Reported

Table 3. Continued

Company	Location	Preservative	Total Cylinder Volume (ft3)	1991 Production (ft3)
Pearl River Wood Preserving Corporation	Picayune, MS	Creosote	10,683	1,075,000
Rogers Post & Lumber Company	Steelville, MO	PCP	1,077	167,731
San Diego Wood Preserving	National City, CA	PCP	UK	NR
Santa Fe Tie Treating Plant	Sommerville, TX	Creosote	31,148	2,804,000
Seaman Timber Company, Incorporated	Monteville, AL	Creosote	UK	2,793,021
Sees Post & Lumber	Marshfield, MO	PCP	UK	34,500 posts
Selma Treating Company	Selma, CA	PCP	UK	470,000
Stallworth Timber Company, Incorporated	Beatrice, AL	Creosote	UK	273,071
		PCP	UK	922,02
Superior Tie and Timber	Vivian, LA	Creosote	5,878	2,222,100
Taylor Lumber & Treating Incorporated	Sheridan, OR	PCP	13,905	539,644
		Creosote	4,635	301,597
Texas Electric Cooperative, Incorporated	Jasper, TX	Creosote	21,102	1,778,785
Thompson Industries, Incorporated	Russellville, AR	Creosote	UK	7,300,000 (bf)
Timco, Incorporated	Wiggins, MS	Creosote	5,935	1,200,000
Union Timber Corporation	Homerville, GA	Creosote	UK	37,000
Webster Wood Preserving Company	Bangor, WI	Creosote	10,048	2,975,000
Western Tar Products Corporation	Terre Haute, IN	Creosote	11,925	1,285,000
Weyerhauser Company	Dequeen, AR	PCP	5,526	160,000 Poles

UK = Unknown
NR = Not Reported

Table 3. Continued

Company	Location	Preservative	Total Cylinder Volume (ft3)	1991 Production (ft3)
Wheeler Consolidated, Incorporated	Whitewood, SD	Creosote	2,826	535,500
		PCP	2,826	600,000
William C. Meredith Company	East Point, GA	PCP	9,827	885,229
Winona Post Company Incorporated	Winona, MO	PCP	UK	NR
Wood Preservers, Incorporated	Warsaw, VA	Creosote	4,522	374,519
Wood Treating, Incorporated	Picayune, MS	Creosote	15,986	961,000

UK = Unknown
NR = Not Reported

Table 4. Domestic Treated Wood Production from 1980 to 1991[1,19]

Add CCA

Year	Creosote Treated Wood Production (thousands cubic feet)	PCP Treated Wood Production (thousands cubic feet)
1980	142,192	60,761
1981	148,379	52,625
1982	NA	NA
1983*	114,774	46,700
1984	137,597	53,610
1985	128,570	52,535
1986	118,749	49,484
1987	97,822	48,557
1988	90,481	47,869
1989	89,870	49,386
1990	93,193	46,592
1991	87,610	43,490

* Only partial data is available for 1983.
NA = Not available

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MEMORANDUM OCT 12 1993

To: Betty Gatano, RTI

FROM: Eugene Crumpler, EPA

SUBJECT: Comments on Draft Industry Profile, August 2, 1993

I have reviewed the above draft profile. My major comment is that we should show the CCA national production figures along side the creosote and PCP annual figures in table 4, page 19. Otherwise the draft is in good shape.

cc: A. Vervaert