PPC 9444.1984(04)

WASTEWATER RTEATMENT SLUDGES FROM WOOD PRESERVING PROCESSES USING CREOSOTE AND/OR PENTACHLOROPHENOL

April 26, 1984

Dave Dolan
Environmental Scientist
Waste Management Branch
Region V
U.S. Environmental Protection Agency
230 S. Dearborn St
Chicago, IL 60604

Dear Dave:

As a result of several inquiries, we wish to clarify which wastes generated by Bell Lumber and Pole, located in New Brighton, Minnesota, are listed as hazardous under Part 261 of the hazardous waste regulations implementing the Resource Conservation and Recovery Act. At the present time, one category of wastes from the wood preserving industry is included as a hazardous waste from a specific source: K001 "Bottom sediment sludge from the treatment of wastewaters from wood preserving processed that use creosote and/or pentachlorophenol".

From process descriptions compiled by the Minnesota Pollution Control Agency, the National Institute of Occupational Safety and Health, and Region V during a recent plant site visit, the following is my understanding of the current and past waste generation points at the Bell Lumber and Pole facility.

1. Work tank/storage tank sludges. These sludges accumulate at the bottom of vertical storage tanks for preservative solutions of pentachlorophenol. In the past, these tanks may have been used for creosote preservative solutions. These tanks receive reclaimed preservative solutions, store them, and in some cases heat the reclaimed solutions prior to reuse in the wood treating tank. Currently, sludges from these tanks are discharged to the mechanical oil/water separator described below.

2. Mechanical oil/water separator sludges. Wastewater contaminated by oil/preservative solutions and sludges are collected at a sump at the wood treating tank and are discharged to a tank (81' x 6') where oil/water separation takes place. This oil/water separation procedures treats effluent generated after completion of the wood treating process. Although no water is intentionally added to this process, a substantial amount of water is released from the wood itself during hot oil/preservative solution steeping. Some of this wastewater is emitted to the air as steam during the steeping process, and some is entrained in the preservative solution or settles to the bottom of the wood treating tank.

The first mechanical oil/water separation device was installed in 1976 at "Tank 8". A steel belt oil/water separator, installed in 1980, is in current use and operated daily except when the weather is cold enough to freeze the water. This oil/water separator daily receives contaminated wastewater effluent directly from the treating tank. Approximately one time each year, bottoms from the storage/work tanks are also added to the mechanical oil/water separator.

3. Thermal dehydration/evaporation sludges. The oil/preservative solutions recovered by the mechanical oil/water separator undergo a secondary wastewater treatment step by thermal dehydration/evaporation. This is currently conducted in the "Butt Treatment Tank" with heating coils, generating a sludge. Other sludges may be added directly to this thermal dehydrator/evaporator without first being subjected to mechanical oil/water separation. Thermal dehydration or evaporation of wastewater from wood preserving solutions typically generates a sludge.

Before installation of the mechanical oil/water separation devices, a thermal dehydration treatment was used as the sole procedure for drying oil/preservative solutions from the wood treating tank. Fuel oil, used as the solvent for either creosote or pentachlorophenol, typically will entrain significant amounts of water during the wood treating process. Entrained wastewater must be removed to regenerate dry oil/preservative solutions for good penetration into the

wood during the treating process. Thermal dehydration of the used oil/preservative solutions in the past could be assumed based on typical industrial process information, with concomitant sludge generation.

From the above description of sludge generating processes, the mechanical oil/water separator sludges and the thermal dehydrator sludges meet the K001 listing description of wastewater treatment sludges from wood preserving processes using creosote and/or pentachlorophenol. If the storage tank/work tank sludges are mixed with the mechanical oil/water separator sludges or thermal dehydration/evaporation sludges, then the resulting mixture also must be managed as a K001 hazardous waste.

Page 21 of the Listing Background Document for the Wood Preserving Industry states "wastewater treatment sludges are generated first at oil/water primary separation", which includes any mechanical oil/water separation device as described for the Bell Lumber and Pole facility, as well as sludges from surge tanks, drainage pits, etc. On page 21, dehydration of oil/preservative solutions and on page 26, evaporation of wastewater from the addition of heat are also described as wastewater treatment processes generating sludges defined as K001 hazardous wastes.

Based on processing procedures used by the wood preserving industry, it is reasonable to assume in the absence of proof to the contrary that Bell Lumber and Pole was generating a K001 wastewater treatment sludge prior to 1976, and indeed throughout its manufacturing history. This is because water removal from spent wood treating solutions is necessary to regenerate usable oil/preservative solutions. We do not know if thermal oil/preservative dehydration or another procedure was used.

Further indication that K001 wastewater treatment sludges were generated prior to installation of the mechanical oil/water separation devices in 1976 and throughout the facility's history comes from the CERCLA "Notification of Hazardous Waste Site", date June 9, 1981. Thomas E. Doten, then Vice President and Plant Manger of Bell Lumber and Pole, states that K001 waste was placed in the on-site landfill up until the late 1960's. He was unable to estimate the amount of K001 waste deposited in this landfill "given age [circa 1920] of facility".

Generation rates of K001 wastewater treatment sludges may be estimated by information in the Listing Background Document and the Effluent Guidelines Division Data Collection Portfolio. From the Listing Background Document, the amount of pentachlorophenol treated wood and the amount of pentachlorophenol wastewater treatment sludges generated annually yields an estimate of 0.276 cubic feet of sludge per 1000 cubic feet of treated wood. Effluent Guidelines Division data for all types wood treating processes (creosote, pentachlorophenol), indicates that approximately 0.432 cubic feet of sludge is generated per 1000 cubic feet of treated wood from zero wastewater discharge plants.

An average wood preserving plant treats 4000 cubic feet of wood per day. Therefore, the annual wastewater treatment sludge generated by a plant would be in the range of 55-87 drums. Some individual plants have indicated they produce several times as much wastewater treatment sludge. If sludges from other plant sources such as storage or work tanks are mixed with the wastewater treatment sludges before or after oil/water separation procedures, then this volume estimate would be higher.

I hope this information is useful in evaluating the waste sources of groundwater contamination from the landfill on the

Bell Lumber and Pole facility. If you have any further questions, please do not hesitate to call me.

Sincerely yours,

Cate Jenkins, Ph.D.
Waste Identification Branch (WH 562)
Characterization and Assessment Division

cc: Matthew A. Straus/OSW
Francine Jacoff/OSW
Steve Silverman/OGC