



## TOXICITY CHARACTERISTIC LEACHING PROCEDURE TESTING OF RAILROAD CROSSTIES

R-708

The ability to dispose of used crossties as a conventional solid waste and not as a regulated hazardous waste is of great importance to the railroad industry. If EPA regulations require disposal of crossties as a regulated hazardous waste, the cost to railroads will be considerable.

On June 13, 1986 EPA proposed a new method for determining if a waste is hazardous; the method is known as the Toxic Characteristic Leaching Procedure or TCLP. The TCLP had the potential for classifying waste crossties as hazardous waste.

The TCLP as originally proposed required samples of solid wastes to undergo particle size reduction in order to pass a 3/8" sieve as part of the sample preparation process. This exposes vast amounts of surface area to the leaching test which is used to determine whether or not the waste material contains chemicals or compounds which can be leached out in hazardous concentrations.

The predecessor test to the TCLP is called the Extraction Procedure (EP). It does not require particle size reduction in sample preparation, nor does its list of hazardous chemicals to be quantified contain o-cresol, m-cresol, p-cresol or phenol, as does the TCLP. These are chemical constituents typically found in creosote-treated crossties. A testing program was initiated by AAR to assess the results of subjecting crossties to the TCLP.

One new tie, a 10 year old tie, and a 20 year old tie were reduced to chips and processed by the 1986 TCLP methodology. They passed the test and did not exhibit a hazardous characteristic, but the concentration of p-cresol present in the extract for the new crosstie was 75% of the proposed EPA limit.

A new test procedure, referred to as the "cage modification" of the TCLP, was proposed in 1988. This required a sample block cut from the crosstie to be tumbled in a wire cage to abrade the sample, in

lieu of particle size reduction by chipping. We extended the test program to evaluate the effect that the new test had on crosstie samples.

A new petroleum/creosote tie and a new coal-tar/creosote tie were processed by the "cage modification" of the TCLP. These ties passed the cage modification of the TCLP by a considerably wider margin than the ties tested earlier in the program.

The results of this testing program indicate that it is likely that new and used crossties from uncontaminated environments will pass the proposed "cage modification" TCLP. New crossties and possibly ties with only a few years of service may approach the borderline of TCLP failure in terms of cresols if the samples have to be tested as in the original 1986 TCLP proposal. Two important qualifications to these results must be kept in mind. Crossties which have received different types of creosote treatments, those of different woods, and those from different environments than the ones tested could be expected to perform differently in the TCLP. Moreover, these results are based on crossties from relatively "clean" environments, e.g., not oil soaked or contaminated by spilled lading or ballast fines which may contain concentrations of heavy metals.

*Copies of the AAR Report: "Toxicity Characteristic Leaching Procedure Testing of Railroad Crossties", are available from the Document Distribution Center, Chicago Technical Center, 3140 South Federal Street, Chicago, Illinois 60616. The AAR report number is R-708; the price is \$10.00 for member railroads and \$30.00 for nonmembers. The cost includes taxes and surface mail postage if mailed within North America. There will be a surcharge for any overseas mail. Checks should be made payable to the Association of American Railroads. This report was issued in August, 1988. A report list is available upon request.*