Comments re:

Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards: Pulp, Paper, and Paperboard Category; National Emissions Standards for Hazardous Air Pollutants for Source Category: Pulp and Paper Production; Availability

Submitted to U.S. EPA
August 14, 1996

Executive Summary

The Alliance for Environmental Technology (AET) strongly supports EPA's long term goals which include improved water quality, elimination of ecologically significant bioaccumulation, and the elimination of fish consumption advisories. AET strongly supports complete substitution of chlorine dioxide in the first stage of bleaching independent of the extent of delignification of unbleached pulp as a technology basis to achieve such goals. This opinion is based on extensive peer-reviewed science and is in accordance with international scientific opinion.

Improved Water Quality

Section 1 of this submission, "A Review and Assessment of the Ecological Risks Associated with the Use of Chlorine Dioxide," was prepared by a panel of esteemed scientists and submitted to the U.S. EPA at the February 10, 1994 public hearing. The report clearly demonstrates that complete substitution of chlorine dioxide in the first stage of pulp bleaching provides considerable environmental benefits.

The panel of scientists reached a unanimous opinion. Based on the existing available data, the panel concluded that chlorinated organics from mills bleaching with chlorine dioxide, employing secondary treatment and with receiving water dilutions typical of most mills in North America, present an insignificant risk to the environment (Solomon et al., 1994). This opinion was reached independent of the extent of delignification of the unbleached pulp prior to bleaching.

Elimination of Ecologically Significant Bioaccumulation

Section 2 of this submission, "An Assessment of the Formation of 2378-TCDD and 2378-TCDF when Chlorine Dioxide is the Oxidizing Agent in the First Stage of Chemical Pulp Bleaching," was prepared by a panel of esteemed scientists and submitted to Dr. Robert Huggett, U.S. EPA, May 17, 1996. The report clearly demonstrates the capability of complete substitution of chlorine dioxide to eliminate ecologically significant bioaccumulation.

The panel of scientists reached a unanimous opinion with the following conclusions:

- The examination of analytical results for laboratory and mill bleaching, the latter comprising 163 samples from 9 Canadian, 6 U.S., and two Swedish mills where ClO_2 had completely replaced Cl_2 in the first stage of bleaching, showed that 2378-TCDD was not found in either mill effluents at detection limits ranging from 0.3-0.9 pg/L (ppq), or in bleached pulp at detection limits of 0.1-0.3 pg/g (ppt). Therefore, complete replacement of Cl_2 with ClO_2 in the first stage of bleaching results in virtual elimination of 2378-TCDD.

- At 6 of the 17 mills mentioned above, 2378-TCDF was not detected in either mill effluents or in bleached pulp. At 5 of these mills, 2378-TCDF was seldom detected, while at 6 of the mills, 2378-TCDF was detected frequently. At the mills where 2378-TCDF was detected, the most probable cause was elevated amounts of dibenzofuran (DBF) precursor in the unbleached pulp. However, in a few cases, sources external to the bleaching process could not be ruled out.

- Downstream of mills which have completely replaced Cl_2 with ClO_2, concentrations of 2378-TCDD and 2378-TCDF in fish were found to be declining rapidly. More importantly, in the only case known to the Panel of a new bleached kraft mill which has never used Cl_2 and only used ClO_2 for bleaching, after one year of operation, 2378-TCDD and 2378-TCDF were not detected (at 0.1 ppt) in fish caught directly downstream of the mill.

- Taken together, the available data, although limited with regard to specific ecological responses, support the conclusion that at bleached chemical pulp mills, where ClO_2 has completely replaced Cl_2, no adverse effects caused by 2378-TCDD or 2378-TCDF from bleaching should be expected from mill effluents.

N.B. This opinion was reached independent of the extent of delignification of the unbleached pulp prior to bleaching.

Elimination of Fish Consumption Advisories

Section 3 of this submission, "Eco-System Recovery: Liftings of Fish Consumption Advisories for Dioxin Downstream of U.S. Pulp Mills," was prepared by the Alliance for Environmental Technology and submitted to Jeff Bigler, U.S. EPA Office of Water, August 13, 1996.

The report, an analysis of the U.S. Environmental Protection Agency's National Listing of Fish and Wildlife Consumption Advisories (NLFWA), reveals three important findings regarding fish consumption advisories for dioxin. First, the number of waterbodies under a dioxin advisory represent 2 percent of the total number of affected waterbodies in the U.S. According to the EPA, there are currently 1,740 waterbodies under some type of advisory

restricting fish or shellfish consumption. Of this total, 37 waterbodies in select pulp and paper states are under a dioxin advisory.

Second, of the 37 waterbodies with a dioxin advisory, only 18 are downstream of U.S. pulp mills, amounting to less than 2 percent of the total 1,740 affected waterbodies.

Third, the small number of waterbodies under a dioxin advisory is steadily diminishing. Since 1991, 13 states have lifted a total of 17 dioxin advisories from waterbodies downstream of U.S. pulp mills. Process changes in pulp manufacture, including the increased use of chlorine dioxide as a bleaching agent, have markedly reduced dioxin discharges and tissue levels in fish living in mill receiving waters.

Chronic Toxicity

AET is concerned that EPA has made assertions in the "Notice of Availability Federal Register Vol. 61, No. 136 p. 36835-36858" (hereinafter referred to as "the Notice") that there are incremental environmental benefits such as "reduced chronic toxicity" attributable to the use of extended delignification. AET does not support EPA's equivocal, misleading, loosely-worded and incorrect assertions that are in conflict with peer-reviewed science and international scientific opinion. Section 4 of this submission is a summary of arguments challenging the assertions that a reduction in chronic toxicity:

- is "probably attributable" to a reduction in mass loadings of non-chlorinated compounds that are indirectly measured by the bulk analytical parameter chemical oxygen demand (COD);

- "may" also reflect an incremental reduction in the potential for formation of dioxin (2378-TCDD) and furan (2378-TCDF); and

- (may also reflect) a reduction in the mass loadings of all chlorinated compounds which can be measured by the bulk analytical parameter adsorbable organic halides (AOX).

AET urges EPA to eliminate such scientifically flawed notions from any preamble or text in the development of final effluent guidelines.

AOX as an Indicator of Polychlorinated Compounds

AET is concerned that EPA has made assertions in "the Notice" that "final AOX loading is an appropriate measure of the performance of in-process and end-of-pipe technologies in reducing the chlorinated organic pollutants such as dioxin and furan found in wastewaters discharged by this industry" and "thus, EPA expects that process changes and treatment technologies implemented to reduce AOX discharges at the end of the pipe will in turn further reduce the likelihood of the formation and discharge of these chlorinated organic pollutants." Section 5 of this submission is a summary of arguments challenging these assertions which are in conflict with peer-reviewed science and international scientific opinion.

AET urges EPA to eliminate such scientifically flawed notions from any preamble or text in the development of final effluent guidelines.

Totally Chlorine-free Technology

AET is concerned that despite international peer-reviewed scientific analysis that show totally chlorine-free technologies provide no additional environmental benefit compared to elemental chlorine-free technologies, and that product quality does not meet today's technologies nor today's product requirements, EPA continues to "strongly encourage further ...

implementation of TCF technologies and products." Section 6 of this submission is a summary of comparisons which show there is no difference between the environmental impact of ECF and TCF-based effluents.

Since there is no environmental justification for implementation of TCF technologies, AET urges EPA to eliminate such encouragement from any preamble or text in the development of final effluent guidelines.