

APPENDIX A.  
EVOLUTION OF THE TECHNICAL SUPPORT DOCUMENT

The purpose of this study was to develop a basis for supporting proposed NESHAP for combustion sources at kraft and soda pulp and mills. This study was initiated in June of 1991 and focused on the following combustion equipment: chemical recovery furnaces (including DCE's), SDT's, BLO systems, and lime kilns. To accomplish the objectives of this study, the following technical data were acquired for each type of combustion equipment: (1) equipment design and operating parameters, (2) types and quantities of HAP's emitted, (3) types and costs of emission control techniques (including both process changes/controls and add-on air pollution control devices), and (4) the effectiveness of these control techniques in reducing HAP emissions. The bulk of the information was gathered from the following sources:

1. Technical literature;
2. Responses to a maximum achievable control technology (MACT) survey distributed by NCASI to U.S. pulp and paper mills;
3. Plant visits;
4. Emission test reports supplied by individual mills, State agencies, and NCASI;
5. Recovery furnace manufacturers; and
6. Manufacturers of ESP's and wet scrubbers.

Significant events relating to the evolution of the TSD are listed in Table A-1.

TABLE A-1. EVOLUTION OF THE TECHNICAL SUPPORT DOCUMENT

Date	Event
7/1/91-7/31/91	Contacted State and local agencies to identify well-controlled combustion sources
8/1/91	Initial meeting with NCASI and AFPA regarding combustion sources NESHAP and "MACT" survey
9/17/91	Site visit to Champion International Corp., Roanoke Rapids, NC
9/23/91	Site visit to Procter and Gamble, Perry, FL
9/24/91	Meeting with Florida Department of Environmental Regulation to discuss kraft pulp and paper mills in Florida and obtain copies of permits
9/25/91	Site visit to Packaging Corp., Clyattville, GA
10/28/91	Meeting with NCASI and AFPA to discuss industry profile
1/10/92	Site visit to Longview Fibre Co., Longview, WA
1/14/92	Site visit to James River Corp., Camas, WA
2/7/92	NCASI MACT survey mailed to industry by NCASI
2/24/92	Meeting with Götaverken to discuss design and operation of kraft recovery furnaces
4/9/92	Public meeting held in Washington, DC to discuss status of NESHAP and effluent guidelines for pulp and paper mills
4/30/92	Initial responses to NCASI MACT survey received by EPA, and kraft combustion sources data base created to tabulate information in these responses
5/30/92	Additional responses to NCASI MACT survey received by EPA
6/24/92	Meeting with Babcock & Wilcox to discuss design and operation of kraft recovery furnaces
7/2/92	Draft summary of responses to NCASI MACT survey prepared
9/22/92	Site visit to MEAD Coated Board, Phenix City, AL
9/23/92	Site visit to Champion International Corp., Courtland, AL
9/30/92	Public meeting in Washington, DC, to discuss status of NESHAP and effluent guidelines for pulp and paper mills
10/8/92-10/31/92	Source test at Champion International Corp., Roanoke Rapids, NC, to identify HAP's emitted from a recovery furnace, smelt dissolving tank, black liquor oxidation system, and lime kiln
11/20/92	Meeting with NCASI and industry representatives to discuss NCASI's source test plan for combustion sources
3/30/93	Meeting with Environmental Elements Corp., Baltimore, MD, to discuss ESP designs, modifications, and upgrades, and associated costs
4/12/93	Meeting with Research-Cottrell, Somerville, NJ, to discuss ESP designs, modifications, and upgrades, and associated costs
5/24/93	First EPA Work Group meeting to discuss status and direction of combustion sources NESHAP
6/14/93	Monthly particulate matter emission data for kraft recovery furnaces, lime kilns, and SDT's received from the State of Washington (1989-1992)
6/15/93	Emission test reports for Texas kraft mills received from NCASI
8/16/93	Letters sent to Andersen 2000, Inc., and AirPol regarding the effectiveness of packed-bed scrubbers on HCl removal from kraft recovery furnace flue gas
9/13/93	Completed review and summary of State regulations regarding PM and gaseous HAP emissions from kraft combustion sources
10/12/93	Meeting with NCASI and industry to discuss methanol emissions and effectiveness of steam strippers

TABLE A-1. (continued)

Date	Event
10/31/93	Review of first draft emission test report from NCASI-sponsored testing at kraft pulp completed
12/2/93	Mill-specific control costs for MACT floor options submitted to EPA for impact analysis
12/16/93	Meeting with NCASI and industry to discuss status of NCASI source test program, subcategories, MACT floors, and proposed format of the standard
1/1/94	Preliminary drafts of TSD Chapter 1 through 6 completed
2/3/94	Meeting with NCASI and industry to discuss status and findings of NCASI's test program
2/17/94	Preliminary draft of TSD Chapter 6 (Control Costs) sent to NCASI for review
3/11/94	Mill-specific control costs for beyond-the-floor options submitted to EPA for impact analysis
3/21/94	Industry comments on preliminary draft of TSD Chapter 6 received
4/11/94	Response to industry comments on preliminary draft of TSD Chapter 6 completed
4/27/94	Preliminary draft of Appendix B completed
5/12/94	An updated version of monthly particulate matter emission data for kraft recovery furnaces, lime kilns, and SDT's received from the State of Washington (1988-1994)
7/13/94	Received and reviewed report from industry summarizing results from an industry survey of recovery furnace manufacturers regarding time needed for recovery furnace conversions that included a list of all kraft and soda recovery furnaces valid through December 1994
7/29/94	All HAP emissions data from NCASI's test program received to date compiled into emissions data base for the project
7/29/94	Preliminary regulatory alternatives developed based on the subcategorization of recovery furnaces for the source category
8/24/94	Combustion sources data base revised to account for mill-wide and recovery furnace shutdowns and furnaces installed since the original MACT survey was completed based on an industry inventory of kraft and soda recovery furnaces
8/31/94	Emissions data received from International Paper Co. compiled and added to emissions data base for the project
9/1/94	Meeting with industry representatives to discuss the MACT standards under consideration and the vendor capacity and resource requirements to rebuild/replace recovery furnaces.
9/14/94	Site visit to Federal Paper Board, Augusta, GA
9/21/94	Site visit to S.D. Warren Co., Muskegon, MI
9/30/94	Received and reviewed HCl study (Technical Bulletin No. 674) conducted by NCASI
10/4/94	Additional mill-specific control costs for MACT floor and beyond-the-floor options submitted to EPA for impact analysis
11/30/94	Second Work Group meeting to provide technical update
12/20/94	Third Work Group meeting to discuss the preliminary regulatory alternatives, the impacts and economic analyses of those alternatives, and the EPA recommended regulatory alternative; examined use of bubble approach to reduce the control costs for particulate control under the EPA recommended regulatory alternative
1/18/95	Teleconference meeting with OECA on enhanced monitoring
1/31/95	Teleconference meeting with States on issues associated with the bubble approach
3/7/95	Teleconference meeting with OECA on enhanced monitoring protocols
4/20/95	Teleconference meeting with OECA on enhanced monitoring

TABLE A-1. (continued)

Date	Event
5/22/95	Meeting with industry representatives regarding control options for the Pulp and Paper NESHAP and the definition of a "clean mill"
8/2/95	Meeting with representatives of the Institute of Clean Air Companies to discuss the status of the NESHAP
2/29/96	Submitted revised mill-specific control costs for new regulatory alternatives to EPA for impact analysis
2/29/96	Submitted inputs for HCl risk analysis to EPA to determine applicability of Section 112(d)(4) of the CAA to HCl controls for pulp and paper combustion sources
4/12/96	Nationwide environmental impacts inputs submitted to EPA for benefits analysis
6/17/96	Meeting with industry representatives to discuss applicability threshold and PM HAP emission limits for new sources
7/8/96	Teleconference meeting with OECA on enhanced monitoring
7/26/96	Draft TSD submitted to EPA and industry representatives for review
7/31/96	Teleconference meeting with industry representatives regarding enhanced monitoring approaches
9/11/96	Fourth Work Group meeting to provide update on status of the NESHAP
9/12/96	NCASI comments on the TSD received