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U.S. ENVIRONMENTAL PROTECTION AGENCY

DRAFT QUESTIONNAIRE FOR THE CHLORINE AND CHLORINATED HYDROCARBON MANUFACTURING SEGMENTS

Form Approved
OMB Control No. XXX
Approval Expires XXX

The public reporting and recordkeeping burden for this collection of information is estimated to average 435 hours per response. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions, develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

To comment on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques, EPA has established a public docket for this ICR under Docket ID No. EPA-HQ-OW-2005-0012, which is available for public viewing at the Water Docket in the EPA Docket Center (EPA/DC), EPA West, Room 3334, 1301 Constitution Ave., NW, Washington, DC 20004. The EPA Docket Center Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Reading Room is (202) 566-1744, and the telephone number for the Water Docket is (202) 566-2426. An electronic version of the public docket is available through the federal data management system (FDMS) at http://www.regulations.gov. Use FDMS to submit or view public comments, access the index listing of the contents of the public docket, and to access those documents in the public docket that are available electronically. Once in the system, select the "advanced search" tab, then key in the docket ID number identified above. Also, you can send comments to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, NW, Washington, DC 20503, Attention: Desk Office for EPA. Please include the EPA Docket ID No. EPA-HQ-OW-2005-0012 and OMB control number (XXXX-XXXX) in any correspondence.

INTRODUCTION

The U.S. Environmental Protection Agency (EPA) is conducting a census of facilities in the chlorine and chlorinated hydrocarbon (CCH) manufacturing segments as part of its effort to review and revise, as appropriate, effluent limitations guidelines and standards for these operations. Most facilities that conduct CCH operations are currently regulated under the Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF) and/or the Inorganic Chemicals Manufacturing Point Source Categories. This questionnaire requests information on facilities that produced chlorine, chlorinated hydrocarbons (CH), and polyvinyl chloride (PVC) (referred to as the CCH manufacturing segments) during calendar year 2006.

This questionnaire is being conducted under the authority of Section 308 of the Clean Water Act (Federal Water Pollution Control Act, 33 U.S.C. Section 1318). **All facilities that receive this questionnaire must respond to it within 120 days** of receiving it. Failure to respond, late filing, or failure to comply with the instructions may result in criminal fines, civil penalties, and other sanctions, as provided by law.

OVERVIEW OF THE QUESTIONNAIRE

The questionnaire is divided into two parts: Part A contains Technical Information, and Part B contains Financial and Economic Information. The parts are divided into the following sections:

PART A: TECHNICAL INFORMATION

INSTRUCTIONS FOR PART A
SECTION 1: GENERAL FACILITY INFORMATION
SECTION 2: MANUFACTURING PROCESS INFORMATION
- 2A: CHLORINE
- 2B: CHLORINATED HYDROCARBON
- 2C: PVC
- 2D: INCINERATION AND AIR POLLUTION CONTROL

SECTION 3: WASTEWATER TREATMENT AND CHARACTERIZATION
SECITON 4: SAMPLING DATA

The technical data collected in Part A of this questionnaire will be used to determine the industry production rates, water use for processes, rates of wastewater generation, pollution prevention, and the practices of wastewater management, treatment, and disposal. Information collected in Part A is for calendar year 2006.

PART B: FINANCIAL AND ECONOMIC INFORMATION

INSTRUCTIONS FOR PART B
SECTION 1: OWNERSHIP INFORMATION
SECTION 2: FACILITY AND COMPANY INFORMATION
SECTION 3: CORPORATE PARENT FINANCIAL INFORMATION

The financial and economic data collected in Part B of this questionnaire will be used to characterize the economic status of the industry and to estimate the possible economic impacts of wastewater regulations. Information collected in Part B is for calendar years 2004 through 2006.

COMPLETION OF THE QUESTIONNAIRE

Each section should be completed by the person(s) most knowledgeable about the information requested. All facilities must have the corporate official or designee responsible for directing or supervising the response to the questionnaire sign one of the Certification Statements on pages vi or vii to either (1) verify and validate the information provided, or (2) certify that this facility did not engage in CCH manufacturing segments operations during the 2006 calendar year. Different people may complete Part A (Technical) and Part B (Economic and Financial).

Keep a Copy of the Completed Questionnaire

Please keep a copy of the completed questionnaire, including attachments. EPA will review the information submitted and may request your cooperation in answering follow-up questions, if necessary, to complete analyses.

QUESTIONNAIRE ASSISTANCE

EPA Chlorine and Chlorinated Hydrocarbon Help Lines

Information About Part A: Technical Information
Eastern Research Group, Inc. ..... XXX-XXX-XXXX
Internet Electronic Mailing Address ..... XXX@erg.com

Information About Part B: Financial and Economic Information
Eastern Research Group, Inc. ..... XXX-XXX-XXXX
Internet Electronic Mailing Address ..... XXX@erg.com

WHEN TO RETURN QUESTIONNAIRE

The response to this questionnaire is due 120 days after receiving it.

If you wish to request an extension, you must do so **in writing** within 60 days of receipt of this questionnaire. Written requests may be e-mailed to Ms. Samantha Lewis at Lewis.Samantha@epa.gov or may be mailed to:

Samantha Lewis
USEPA Headquarters
Ariel Rios Building
1200 Pennsylvania Avenue, N. W.
Mail Code: 4303T
Washington, DC 20460

Extension requests will be evaluated on a case-by-case basis. Submittal of an extension request to EPA does **not** alter the due date of your questionnaire unless and until EPA agrees to the extension and establishes a new date.

WHERE TO RETURN QUESTIONNAIRE

After completing the questionnaire and certifying the information that it contains, please use the enclosed mailing label to mail the completed questionnaire to:

U.S. Environmental Protection Agency
Collection of CCH Industry Data
c/o Eastern Research Group, Inc.
14555 Avion Parkway, Suite 200
Chantilly, VA 20151-1102

REQUESTING AN ELECTRONIC VERSION OF THE QUESTIONNAIRE

[Note: Instructions will be added once questionnaire distribution method is determined.]

If you would like an electronic version of the questionnaire, it is available on the EPA Web site at http://www.epa.gov/waterscience/guide.

CONFIDENTIAL BUSINESS INFORMATION

If no business confidentiality claim accompanies the information when it is received by EPA, EPA may make the information available to the public without further notice.

Regulations governing the confidentiality of business information are contained in the Code of Federal Regulations (CFR) at Title 40 Part 2, Subpart B. You may assert a business confidentiality claim covering part or all of the information you submit, other than effluent data and information or data that is otherwise publicly available, as described in 40 CFR 2.203(b):

> "(b) *Method and time of asserting business confidentiality claim.* A business which is submitting information to EPA may assert a business confidentiality claim covering the information by placing on (or attaching to) the information, at the time it is submitted to EPA, a cover sheet, stamped or typed legend, or other suitable form of notice complying language such as 'trade secret,' 'proprietary,' or 'company confidential.' Allegedly confidential portions of otherwise nonconfidential documents should be clearly identified by the business, and may be submitted separately to facilitate identification and handling by EPA. If the business desires confidential treatment only until a certain date or until the occurrence of a certain event, the notice should so state."

You may claim as confidential all information included in the response to a question by checking the Confidential Business Information (CBI) box next to the question number. For Part B only, you may claim all eligible data in Part B as confidential by checking the box on page B-1. Note that you may be required to justify any claim of confidentiality at a later time. Note also that facility effluent data are not eligible for confidential treatment, pursuant to Section 308(b) of the Clean Water Act, and thus will be treated as nonconfidential even if the CBI box is checked. In addition, information that is publicly-available should not be claimed confidential. Note also that information claimed confidential cannot be accessed or used by the industry to evaluate data and analyses supporting the national effluent guidelines regulations.

Information covered by a claim of confidentiality will be disclosed by EPA only to the extent of, and by means of, the procedures set forth in 40 CFR Part 2, Subpart B. In general, submitted information protected by a business confidentiality claim may be disclosed to other employees, officers, or authorized representatives of the United States concerned with implementing the Clean Water Act.

Information covered by a claim of confidentiality will be made available to EPA contractors to enable the contractors to perform the work required by their contracts with EPA. All EPA contracts provide that contractor employees use the information only for the purpose of performing the work required by their contracts and will not disclose any CBI to anyone other than EPA without prior written approval from each affected business or from EPA's legal office.

CERTIFICATION STATEMENT

The individual responsible for directing or supervising the preparation of the questionnaire must read and sign the Certification Statement listed below. The certifying official must be a responsible corporate official or his/her authorized representative.

Certification Statement #1 should be completed and signed if this facility engaged in ***CCH manufacturing segments*** operations during the 2006 calendar year.

Certification Statement #2 should be completed and signed if this facility did not engage in ***CCH manufacturing segments*** operations during the 2006 calendar year.

Certification Statement #1

I certify under penalty of law that the attached questionnaire was prepared under my direction or supervision and that qualified personnel properly gathered and evaluated the information submitted. The information submitted is, to the best of my knowledge and belief, accurate and complete. In those cases where we did not possess the requested information for questions applicable to our facility, we provided best estimates. We have to the best of our ability indicated what we believe to be company confidential business information as defined under 40 CFR Part 2, Subpart B. We understand that we may be required at a later time to justify our claim in detail with respect to each item claimed confidential. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment as explained in Section 308 of the Clean Water Act.

Signature of Certifying Official

Date

Printed Name of Certifying Official

( ) Telephone Number of Certifying Official

Title of Certifying Official

Facility Name

(Continue to Part A, Section 1 of the questionnaire)

Certification Statement #2

*I certify under penalty of law that this facility did not engage in **CCH manufacturing segments** operations in calendar year 2006. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment as explained in Section 308 of the Clean Water Act.*

Signature of Certifying Official

Date

Printed Name of Certifying Official

( ) Telephone Number of Certifying Official

Title of Certifying Official

Facility Name

(Return the questionnaire along with the signed Certification Statement #2 to the address provided on page ii)

DEFINITIONS
The terms identified below will be identified in the text of this questionnaire in bold and italic font.

Air Pollution Control (APC) – Control equipment in which gases are cleaned with or without the use of water.

Batch – A discrete volume of chemical or ***wastewater*** that is collected, treated, and/or ***discharged***.

Best Management Practice – ***Pollution prevention*** practices that help to avoid contact between ***pollutants*** and water media that may include good housekeeping measures, good management techniques, product modifications, operational changes, materials substitution, materials and water conservation, and other measures.

Bottoms – The stream removed from the reboiler (or bottom) of a distillation column.

Brine Processing – In the ***chlor-alkali process***, the treatment of aqueous sodium chloride (brine) to remove specific chemical constituents prior to its use in the ***electrolytic cell***.

CCH Manufacturing – *Unit operation*s in the CCH manufacturing segments include:
(1) Any processes used to manufacture chlorine;
(2) Processes that produce ***chlorinated*** hydrocarbons (with the exception of pharmaceuticals regulated under 40 CFR Part 439 or pesticides regulated under 40 CFR Part 455) using:
(a) non-substituted alkanes, alkenes, or aromatics or other chlorinated hydrocarbons as starting materials, and
(b) ***direct chlorination***, ***oxychlorination***, ***hydrochlorination***, and/or ***dehydrochlorination***; and
(3) Processes that produce PVC.
See the definition of chlorinated hydrocarbon below.

CCH Manufacturing Segments – Facilities that manufacture any chemical listed in Table 1 below using a method described in the ***CCH manufacturing*** definition or that manufacture any other chlorinated hydrocarbon included in the definition of ***CCH manufacturing.***

Table 1: Chemicals in the Chlorine and Chlorinated Hydrocarbon Manufacturing Segments

IUPAC Name	Common Name	CAS Registry Number
Chlorinated Paraffins	Chlorinated Paraffins	63449-39-8
Chlorine	Chlorine	7782-50-5
Chlorobenzene	Monochlorobenzene	108-90-7
2-Chlorobutadiene	Chloroprene	126-99-8
1-Chlorobutane	Butyl Chloride	109-69-3
Chloroethane	Ethyl Chloride	75-00-3
1-Chlorohexane	Hexyl chloride	544-10-5
Chloromethane	Methyl Chloride	74-87-3
Chloromethyl Benzene	Benzyl Chloride	100-44-7
1-Chloro-2-methylpropene	Methyl Allyl Chloride	513-37-1
1-Chloropropane	n-Propyl chloride	540-54-5
3-Chloro-1-propene	Allyl Chloride	107-05-1
Chlorotoluene	o,m,p-Chlorotoluene	25168-05-2

Table 1: Chemicals in the Chlorine and Chlorinated Hydrocarbon Manufacturing Segments

IUPAC Name	Common Name	CAS Registry Number
1,2-Dichlorobenzene	o-Dichlorobenzene	95-50-1
1,3-Dichlorobenzene	m-Dichlorobenzene	541-73-1
3,4-dichloro-1-butene		760-23-6
1,4-dichloro-2-butene	2-Butylene Dichloride	764-41-0
1,1-dichloro-2-chloroethylene	Trichloroethylene	79-01-6
1,1-Dichloroethane	Ethylidene Chloride	75-34-3
1,2-Dichloroethane	Ethylene Dichloride	107-06-2
1,1,-Dichloroethene	Vinylidene Chloride	75-35-4
1,2-Dichloroethene	Acetylene dichloride	156-60-5 (trans)
Dichloromethane	Methylene Chloride	75-09-2
1,1-Dichloropropane	Propylidene chloride	78-99-9
1,2-Dichloropropane	Propylene dichloride	78-87-5
1,3-Dichloropropane	Trimethylene Dichloride	142-28-9
2,2-Dichloropropane	Dimethyl-dichloromethane	594-20-7
1,2-Dichloropropene	1,2-Dichloropropylene	563-54-2
Hexachlorobenzene (HCB)	Amatin	118-74-1
Hexachlorobutadiene	Perchlorobutadiene	87-68-3
Hexachlorocyclopentadiene	Perchlorocyclopentadiene	77-47-4
1,1,1,2,2,2-hexachloroethane	Hexachloroethane	67-72-1
Monochloroethylene	Vinyl Chloride	75-01-4
1,2,3,4,5-Pentachlorobenzene	Pentachlorobenzene	608-93-5
Pentachloroethane	Ethane pentachloride	76-01-7
Polyvinyl Chloride	Polyvinyl Chloride	108-90-7
1,2,3,4-tetrachlorobenzene	Tetrachlorobenzene	12408-10-5
1,1,1,2-Tetrachloroethane	Chloromethyltrichloromethane	630-20-6
1,1,2,2-Tetrachloroethane	Acetylene Tetrachloride	79-34-5
1,1,2,2-Tetrachloroethylene	Perchloroethylene	127-18-4
trans-1,4-Dichloro-2-butene	trans-2-Butylene dichloride	110-57-6
Trichlorobenzene	Trichlorobenzene	12002-48-1
1,1,2-Trichloroethane	Vinyl Trichloride	79-00-5
Trichloromethane	Chloroform	67-66-3
1,2,3-Trichloropropane	Allyl trichloride	96-18-4
1,2,3-Trichloropropene	Trichloropropene	96-19-5

Chlor-Alkali Process – The chlor-alkali process produces chlorine gas and sodium hydroxide (caustic) by passing an electric current through a sodium chloride (brine) solution. Potassium chloride may also be used as the feedstock to produce chlorine and potassium hydroxide.

Chlorinated Hydrocarbon Purification – The process of removing ***impurities*** from crude ***chlorinated hydrocarbons*** by passing the crude stream through a series of units (I.e., wash trains, distillation columns).

Chlorinated Hydrocarbons – Chemicals containing only carbon, hydrogen, and chlorine. Chemicals regulated as a pharmaceutical (40 CFR Part 439) or pesticide (40 CFR Part 455) are not included in the definition.

Chlorine Condensate – In the ***chlor-alkali process***, the water removed from the wet chlorine gas stream exiting the ***electrolytic cell***.

Chlorine Processing – In the ***chlor-alkali process***, the removal of water and other ***impurities*** from the chlorine gas exiting the ***electrolytic cell***.

Clean Water Act – Federal legislation enacted by Congress to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (Federal Water Pollution Control Act of 1972, as amended, 33 U.S.C. 1251 et seq.).

Contact Stormwater – Stormwater that comes into direct contact with ***CCH manufacturing*** processes or ***process wastewater***.

Continuous Flow – A flow regime characterized by persistent flow, as opposed to ***intermittent flow*** or ***batch*** processes.

Contract Haul – The removal of any waste stream from a facility by a company authorized to transport and dispose of the waste, excluding ***discharges*** to sewers or ***surface waters***.

Crude Chlorinated Hydrocarbon – Unpurified chlorinated hydrocarbon exiting a ***reactor***.

Dehydrochlorination - Elimination of HCl from a chlorinated hydrocarbon to produce an unsaturated product. Can be accomplished by reaction with bases (caustic dehydrochlorination), catalytic reactions, or by thermal noncatalytic chemistry (thermal cracking).

Design Capacity Flow Rate – Maximum flow rate a ***unit operation*** or ***treatment unit*** is designed to handle.

Diaphragm Cell – An ***electrolytic cell*** used in the ***chlor-alkali process*** containing a barrier or diaphragm through which sodium ions from the brine solution selectively permeate. The barrier could be made of asbestos or other materials such as polymers.

Dioxins – The seventeen chlorinated dibenzo-p-dioxin (CDD) and chlorinated dibenzofuran (CDF) congeners listed below:

Table 2: The 17 Dioxin Congeners

CAS Number	Chemical Name	Abbreviated Name
CDDs		
1746-01-6	2,3,7,8-tetrachlorodibenzo-p-dioxin	2,3,7,8-TCDD
40321-76-4	1,2,3,7,8-pentachlorodibenzo-p-dioxin	1,2,3,7,8-PeCDD
39227-28-6	1,2,3,4,7,8-hexachlorodibenzo-p-dioxin	1,2,3,4,7,8-HxCDD

Table 2: The 17 Dioxin Congeners

CAS Number	Chemical Name	Abbreviated Name
57653-85-7	1,2,3,6,7,8-hexachlorodibenzo-p-dioxin	1,2,3,6,7,8-HxCDD
19408-74-3	1,2,3,7,8,9-hexachlorodibenzo-p-dioxin	1,2,3,7,8,9-HxCDD
35822-46-9	1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin	1,2,3,4,6,7,8-HpCDD
3268-87-9	1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin	1,2,3,4,6,7,8,9-OCDD
CDFs		
51207-31-9	2,3,7,8-tetrachlorodibenzofuran	2,3,7,8-TCDF
57117-41-6	1,2,3,7,8-pentachlorodibenzofuran	1,2,3,7,8-PeCDF
57117-31-4	2,3,4,7,8-pentachlorodibenzofuran	2,3,4,7,8-PeCDF
70648-26-9	1,2,3,4,7,8-hexachlorodibenzofuran	1,2,3,4,7,8-HxCDF
57117-44-9	1,2,3,6,7,8-hexachlorodibenzofuran	1,2,3,6,7,8-HxCDF
72918-21-9	1,2,3,7,8,9-hexachlorodibenzofuran	1,2,3,7,8,9-HxCDF
60851-34-5	2,3,4,6,7,8-hexachlorodibenzofuran	2,3,4,6,7,8-HxCDF
67562-39-4	1,2,3,4,6,7,8-heptachlorodibenzofuran	1,2,3,4,6,7,8-HpCDF
55673-89-7	1,2,3,4,7,8,9-heptachlorodibenzofuran	1,2,3,4,7,8,9-HpCDF
39001-02-0	1,2,3,4,6,7,8,9-octachlorodibenzofuran	1,2,3,4,6,7,8,9-OCDF

Direct Chlorination – Introduction of chlorine into a chemical compound by one of the following mechanisms:

(1) Free radical substitution: Chlorine radicals may be generated by thermal (>250°C), photochemical (UV light), or chemical (initiators) means;
(2) Addition chlorination: Ionic addition method typically uses a Lewis acid, such as ferric chloride, aluminum chloride, antimony pentachloride, or cupric chloride. A radical chain mechanism can also be applied; or
(3) Electrophilic aromatic substitution.

Discharge – The conveyance of ***wastewater*** to: (1) United States ***surface waters*** such as rivers, lakes, and oceans, or (2) a publicly owned, privately owned, federally owned, combined, or other treatment works.

Disposal – Intentional placement of waste into or on any land where the material will remain after closure. Waste placed into water is defined as ***discharge***, not disposal.

Electrolysis – In chlorine production, passage of an electric current through a conducting solution or molten salt that is decomposed in the process.

Electrolytic Cell – In the ***chlor-alkali process***, a cell containing an electrolyte through which an externally generated electric current is passed by a system of electrodes to produce an electrochemical reaction.

End-of-Pipe Wastewater Treatment System – A system that receives and treats ***wastewaters*** from any combination of the following: process wastewater ***discharges***, ***wastewater treatment*** system discharges, ***stormwater***, or ***pretreatment*** system discharges.

Evaporation – The process by which water or other liquid becomes a gas. Water from land areas, bodies of water, and all other moist surfaces is absorbed into the atmosphere as a vapor.

Facility – A facility is one contiguous physical location with ***CCH manufacturing segments*** operations. A facility includes all contiguous or adjoining property that is under common control, including properties that are separated only by a road or other public right-of-way. In some instances, a facility may include properties located within separate fence lines, but located close to each other.

Groundwater – Water in a saturated zone or stratum beneath the surface of land or water.

Hydrochlorination - Introduction of chlorine into a chemical compound by one of the following mechanisms:

(1) Electrophilic addition of HCl to alkenes, or
(2) Chloro Dehydroxylation: Substitution of a hydroxyl group with HCl to form an alkyl chloride and water (e.g., hydrochlorination of methanol to produce methyl chloride).

Impurity – A chemical substance which is unintentionally present with another chemical substance.

Incineration – A controlled combustion process most commonly used for destruction of solid, liquid, or gaseous wastes.

Injection Well (Deep or Shallow Well Injection) – Any bored, drilled, or driven shaft or a dug hole, improved sinkhole, or a subsurface fluid distribution system where the depth is greater than the largest surface dimension that is used to ***discharge*** fluids underground. The most common wells discharge fluid a few feet underground. Examples include onsite drainage systems, septic systems, cesspools, stormwater wells, french drains, and deep wells.

Intermittent Flow – A flow regime characterized by flows that occur sporadically, seasonally, or for only a portion of time during normal operations.

Landfill – A natural or man-made formation in the earth into which solid waste, ***sludges***, or other process residuals are placed for permanent ***disposal***.

Maximum Daily Flow – The maximum flow in a 24-hour period.

Membrane Cell – An electrolytic cell used in the chlor-alkali process containing an ion-exchange membrane through which sodium ions from the brine solution selectively permeate.

Mercury Cell – An electrolytic cell used in the chlor-alkali process with adjustable metal anodes hanging from the top of the cell, and mercury (which forms the cathode of the cell) floating on the inclined bottom.

Non-Contact Cooling Water – Water used for the sole purpose of removing unwanted heat from a process stream, that does not come into contact with process chemicals or materials.

Non-Contact Stormwater – Stormwater that does not come into direct contact with ***CCH manufacturing*** processes or ***process wastewater***.

NPDES Permit Program – The National Pollutant Discharge Elimination System (NPDES) program authorized by Sections 307, 318, 402, and 405 of the ***Clean Water Act*** that applies to ***facilities*** that ***discharge wastewater*** directly to United States ***surface waters***.

Oxychlorination – Reaction of chlorine or hydrogen chloride with oxygen and a hydrocarbon or chlorinated hydrocarbon in the presence of a chloride catalyst (typically copper chloride) to form a ***chlorinated hydrocarbon***.

Plant – An arrangement of ***reactors***, machines, and equipment dedicated to the production of a chemical or chemicals. For example, a ***facility*** might operate two chlor-alkali plants: one membrane cell and one diaphragm cell each producing chlorine and sodium hydroxide. Plant is similar to the definition of chemical manufacturing process unit used in the hazardous organic NESHAP (HON).[1]

Plant Source Water – Intake water from public utilities, streams, rivers, lakes, or underground aquifers that is used to supply or feed manufacturing or treatment processes.

Pollutant – Under the ***Clean Water Act***, a dredged spoil, solid waste, incinerator residue, filter backwash, sewage ***sludge***, munitions, chemical waste, biological material, certain radioactive material, heat, wrecked or discarded equipment, rock sand, cellar dirt, and industrial, municipal, and agricultural waste (40 CFR 122.2).

Pollution Prevention – The use of materials, processes, or practices that reduce or eliminate the creation of ***pollutants*** or wastes. It includes practices that reduce the use of hazardous and nonhazardous materials, energy, water, or other resources, as well as those practices that protect natural resources through conservation or more efficient use. Pollution prevention includes but is not limited to source reduction, in-process ***recycle*** and reuse, and water conservation practices.

Polychlorinated Biphenyls (PCBs) – The twelve PCB congeners listed below:

Table 3: The PCB Congeners of Interest

CAS Number	Chemical Name	Abbreviated Name
32598-13-3	3,3'4,4'-tetrachlrobiphenyl	3,3'4,4'-TeCB
70362-50-4	3,4,4',5-tetrachlorobiphenyl	3,4,4',5-TeCB
32598-14-4	2,3,3'4,4'-pentachlorobiphenyl	2,3,3'4,4'-PeCB
74472-37-0	2,3,4,4',5-pentachlorobiphenyl	2,3,4,4',5-PeCB
31508-00-6	2,3'4,4',5-pentachlorobiphenyl	2,3'4,4',5-PeCB
65510-44-3	2',3,4,4',5-pentachlorobiphenyl	2',3,4,4',5-PeCB
57465-28-8	3,3'4,4',5-pentachlorobiphenyl	3,3'4,4',5-PeCB
38380-08-4	2,3,3',4,4',5-hexachlorobiphenyl	2,3,3',4,4',5-HxCB
69782-90-7	2,3,3'4,4',5'-hexachlorobiphenyl	2,3,3'4,4',5'-HxCB
52663-72-6	2,3',4,4',5,5'-hexachlorobiphenyl	2,3',4,4',5,5'-HxCB
32774-16-6	3,3'4,4',5,5'-hexachlorobiphenyl	3,3'4,4',5,5'-HxCB
39635-31-9	2,3,3',4,4',5,5'-heptachlorobiphenyl	2,3,3',4,4',5,5'-HpCB

[1] The definition of chemical manufacturing process unit from the HON (40 CFR Part 63.101) follows: chemical manufacturing process unit means the equipment assembled and connected by pipes or ducts to process raw materials and to manufacture an intended product. A chemical manufacturing process unit consists of more than one unit operation. For the purpose of this subpart, chemical manufacturing process unit includes air oxidation reactors and their associated product separators and recovery devices; reactors and their associated product separators and recovery devices; distillation units and their associated product separators and recovery devices; associated unit operations; associated recovery devices; and any feed, intermediate and product storage vessels, product transfer racks, and connected ducts and piping. A chemical manufacturing process unit includes pumps, compressors, agitators, pressure relief systems, open-ended valves or lines, valves, connectors, instrumentation systems, and control devices or systems. A chemical manufacturing process unit is identified by its primary product.

Pretreatment – A ***wastewater treatment*** system for segregated ***wastewater*** with specific ***pollutant*** characteristics (e.g., high organic content) to pretreat the wastewater for those specific pollutants prior to ***discharge*** to an ***end-of-pipe wastewater treatment system***.

Privately Owned Treatment Works (PrOTW) – Any device or system owned and operated by a private company that is used to recycle, reclaim, or treat liquid industrial wastes not generated by that company.

Process Wastewater – Any water that, during manufacturing or processing, comes into direct contact with or results from the storage, production, or use of any raw material, intermediate product, finished product, byproduct, or waste product. Wastewater from equipment cleaning, direct-contact air pollution control devices, rinse water, ***contact stormwater***, and contact cooling water are considered process wastewater. Process wastewater may include wastewater that is ***contract hauled*** for offsite ***disposal***. Sanitary wastewater, uncontaminated ***non-contact cooling water***, and ***non-contact stormwater*** are not considered process wastewater.

Publicly Owned Treatment Works (POTW) – Any device or system owned by a state or municipality that is used to recycle, reclaim, or treat liquid municipal sewage and/or liquid industrial wastes.

Quench – Rapid cooling achieved through application of water.

Reactor – A device or vessel in which one or more chemicals or reactants are combined or decomposed in such a way that their molecular structures are altered and one or more new compounds are formed.

Receiving Stream – A stream, river, or other ***surface water*** body to which ***wastewater*** or other ***pollutants*** are ***discharged***.

Recovery – For the purposes of this questionnaire, to remove valuable chemical components of a waste stream by physical or chemical separation. Generally, the recovered product(s) is ***recycled*** to the process or sold.

Recycle – To return a stream or a portion of a stream to an earlier step in the manufacturing or treatment process.

Sanitary Wastewater – ***Wastewater*** that is generated from restrooms, cafeterias, showers, and domestic (versus industrial) activities.

Sludge – The accumulated solids and solid residues separated from liquids during ***wastewater treatment***.

Surface Waters – Waters of the United States including, but not limited to, oceans and all interstate and intrastate lakes, rivers, streams, creeks, mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, and natural ponds.

Treatment Unit – A ***unit operation*** used to remove ***pollutants*** from ***process wastewater***. Treatment units include, but are not limited to biological treatment, steam strippers, clarifiers, and filters. Neutralization tanks are considered treatment units for the purpose of this questionnaire, but the process of final pH adjustment prior to ***discharge*** is not considered a treatment unit.

Unit Operation – One or more pieces of process equipment used to make a single change to the physical or chemical characteristics of one or more process streams. Unit operations include, but are not limited to, ***reactors***, distillation units, strippers, separators, dryers, and filtration equipment.

Wastewater – Water that has been used (e.g., for washing, flushing, or in a manufacturing process) and so contains waste products. This questionnaire considers ***process wastewater*** separately from ***sanitary wastewater***, uncontaminated ***non-contact cooling water***, and ***non-contact stormwater***.

Wastewater Treatment – The processing of ***wastewater*** by physical, chemical, biological, or other means to remove specific ***pollutants*** from the wastewater stream or to alter the physical or chemical state of specific pollutants in the wastewater stream. Treatment is performed to allow for ***discharge*** of wastewater, ***recycle*** of wastewater, or reuse of the wastewater in another process.

Wet Air Pollution Control – The removal of contaminant from the gas stream through contact application of an aqueous solution (usually water). Examples of wet air pollution control devices include scrubbers and wet electrostatic precipitators.

Zero Discharge – ***Disposal*** of process and/or non-***process wastewaters*** other than by direct ***discharge*** to ***surface water*** or by indirect discharge to a POTW. Examples include ***evaporation***, well ***injection***, ***contract hauling***, and/or offsite ***recycle***/***recovery***.

ACRONYMS

°C	Degrees Celsius
°F	Degrees Fahrenheit
µg/L	Micrograms per liter
%	Percent
APC	Air pollution control
BTU	British thermal unit
CCH	Chlorine and chlorinated hydrocarbon
CFR	Code of Federal Regulations
CH	Chlorinated hydrocarbons (see Table 1 in Definition of Terms)
dpy	Days per year
EDC	Ethylene Dichloride
ft	Foot
ft^2	Square foot
ft^3	Cubic foot
ft^3/min	Cubic feet per minute
gal	Gallon
gpd	Gallons per day
gpm	Gallons per minute
hrs/day	Hours per day
in	Inch
kWh	Kilowatt-hour
lb	Pound
lb/hr	Pounds per hour
M	Moles per liter (molarity)
mg/L	Milligrams per liter
MGD	Million gallons per day
MMBTU/hr	Million BTUs per hour
mmcf	Million cubic feet
MW	Megawatt
NA	Not applicable
NAICS	North American Industry Classification System
pg/L	Picograms per liter
POTW	Publicly Owned Treatment Works
PrOTW	Privately Owned Treatment Works
PVC	Polyvinyl Chloride
RCRA	Resource Conservation and Recovery Act
s	Second
SIC	Standard Industrial Classification
ton	English ton, wet weight
tpy	Ton per year
URE	Unable to reasonably estimate
VCM	Vinyl Chloride Monomer
WAPC	Wet air pollution control
yr	Year

INSTRUCTIONS FOR PART A OF QUESTIONNAIRE

Read all question-specific instructions and definitions of key terms. Throughout Part A of the questionnaire, defined terms are in ***bold italics***.

Complete Part A of the questionnaire for your entire facility.

Not all questions will be applicable to every facility. EPA prepared Part A of the questionnaire to be applicable to a variety of facilities; therefore, not all of the questions will apply to every facility. Complete each relevant item in the questionnaire. If a question is not applicable to your facility, write, "NA."

Mark responses for each question. Fill in the appropriate response(s) to each question. Please use **black ink** or **type** in the spaces provided. Answer the questions in sequence unless you are directed to SKIP. Do not leave any entry blank. If the answer is zero, write "0" or "zero". If a question is not applicable to your facility, write "NA." EPA intends that responses to all questions be based upon available data and information. Please provide best estimates when exact data are not available. If you provide an estimate, note the methods that were used to make the estimate, along with the section and question number that the estimate refers, on the Comments page at the end of each section. If you are unable to reasonably estimate a response, write "URE".

You are not required to perform new or nonroutine tests or measurements solely for the purpose of responding to this questionnaire. EPA intends that responses to all questions be based upon available data and information. In the event that exact data are not available, please provide best engineering estimates and note the methods that were used to make the estimates on the Comments page located at the end of each section. If you are unable to reasonably estimate a response, write "URE".

Include any clarifying attachments. If additional attachments are required to clarify a response, please place the associated question number and your facility identification number in the top right corner of each page of the attachments. The following list contains examples of items that may be included as attachments to this questionnaire:

- Facility brochure, pamphlet, general description;
- Process and wastewater treatment flow diagrams;
- Hard copy or electronic analytical data collected from monitoring locations;
- Manufacturing and wastewater treatment operation and maintenance logs; and
- Pollution prevention or management practices policies or data.

You may need to make copies of some pages before responding. Some pages in Part A of the questionnaire will need to be photocopied before you respond. Indicate how many copies of the page you are submitting by completing the entry "Copy ___ of ___" in the top right corner.

Some SECTIONS in Part A of the questionnaire may need to be photocopied before you respond. Indicate how many copies of the section you are submitting by completing the entry "Section Copy _____ of _____" at the top of each page.

Pay close attention to the measurement units requested (e.g., gallons per day, pounds). Report answers in the units that are specified, unless the question requires you to specify the units.

Indicate information that should be treated as confidential. You may claim as confidential all information included in the response to a question by checking the Confidential Business Information (CBI) box next to the question number. Note that you may be required to justify any claim of confidentiality at a later time. See the CONFIDENTIAL BUSINESS INFORMATION section on page iii.

Indicate atypical data on comments pages at the end of each section. Year-to-year operations are expected to fluctuate, but note in the comments pages if 2006 information is not representative of normal operations.

Questions? If you have any questions regarding the completion of this questionnaire, see the QUESTIONNAIRE ASSISTANCE section on page ii.

SECTION 1 - GENERAL FACILITY INFORMATION

GENERAL INSTRUCTIONS FOR SECTION 1

This section of the questionnaire is designed to collect general facility information. The type of information requested includes facility address, facility and company contacts, and process operations at your facility. In order to understand the overall product flow, Question 1-8 requests a general block diagram.

Indicate information that should be treated as confidential by checking the Confidential Business Information (CBI) box next to each question number with responses containing CBI. Any response where "CBI" is not checked will be considered nonconfidential. Refer to the instructions given in the CONFIDENTIAL BUSINESS INFORMATION section on page iii for additional information regarding EPA's confidentiality procedures set forth in 40 CFR Part 2, Subpart B.

1-1. Is the ***facility*** mailing address shown on the cover page complete and correct? [Check (✓) the box below.]

☐ Yes *(Skip to Question 1-3)*
☐ No

1-2. If it is not the correct address for this ***facility***, provide the correct facility name and address in the spaces provided below.

Company Name

Facility Name (if any)

Facility Address or P.O. Box

Facility City

State

Zip Code

1-3. If the street (i.e., physical) address of your ***facility*** is different from the mailing address on the cover page or given in Question 1-2, provide the street address in the spaces provided below. If the mailing address and street address are the same, check (✓) the box below.

☐ Address on cover page or response to Question 1-2 is street address.

Street Address

City

State

Zip Code

1-4. Provide the name, title, telephone and facsimile numbers, and e-mail address of the primary contact at your ***facility*** for information supplied in Part A of this questionnaire.

_____ ( ) _____
Primary Contact Name — Telephone Number

_____ ( ) _____
Primary Contact Title — Facsimile Number

_____
Email

Convenient time to call between:
_____ ☐ am / ☐ pm and
_____ ☐ am / ☐ pm (Eastern Time)

_____
Street Address

_____ _____ _____
City — State — Zip Code

1-5. Provide the name, title, telephone and facsimile numbers, and e-mail address of the secondary contact at your ***facility*** for information supplied in Part A of this questionnaire.

_____ ( ) _____
Secondary Contact Name — Telephone Number

_____ ( ) _____
Secondary Contact Title — Facsimile Number

_____
Email

Convenient time to call between:
_____ ☐ am / ☐ pm and
_____ ☐ am / ☐ pm (Eastern Time)

_____
Street Address

_____ _____ _____
City — State — Zip Code

CBI?
☐ Yes

1-6. List the primary Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes assigned to the following:

Organization	Primary SIC Codes	Primary NAICS Codes
Company		
Corporate Parent		

CBI? ☐ Yes

1-7. Provide a summary of the ***CCH manufacturing segments*** plants at your ***facility*** on the following table by chemical process type (chlorine, chlorinated hydrocarbon, or PVC manufacturing). For **each** CCH manufacturing segments plant at the facility **complete one row** of the table following the instructions outlined below. Please note that you only need to include ***plants*** that meet the definition of ***CCH manufacturing***. For chlorine manufacturers, a plant can be considered to be the same as a cell room. Make additional copies of the question if additional space is required.

- **Column I** – Enter the type of plant. Please use terms from Table 1-1.

Table 1-1: Plant Types

Plant Type	Code
Chlor-alkali – Diaphragm cell (asbestos)	CL-DA
Chlor-alkali – Diaphragm cell (non-asbestos)	CL-DNA
Chlor-alkali – Membrane cell	CL-M
Chlor-alkali – Mercury cell	CL-HG
Chlorinated hydrocarbon	CH
PVC	PVC

- **Column II** - The ***facility*** name for the ***plant*** in Column I. For example, Vinyl Plant A;
- **Column III** - The year the ***plant*** began operating;
- **Column IV** - An indication of whether the ***plant*** operated in 2006;
- **Column V** – A code indicating the reason for any non-operating ***plants*** selected from Table 1-2.

Table 1-2: Description of Non-Operating Plants

Non-Operating Plant Description	Code
Business decision (because of market conditions)	MC
Maintenance, Rebuilding, Repair	MRR
Not applicable (no idled lines)	NA
Plant will resume operations	YR
Plant will not resume operations	NR
Other (please specify in Comments Page at the end of Section 1)	OTH

- **Column VI** – An indication of whether there are plans for the ***plant*** to be idled or shutdown and the estimated date of the shutdown.

For each ***plant/***cell room you list on the table, complete the section of the Questionnaire identified in Column VII. Additional instructions are at the beginning of each section. Please note that you will complete Section 2 by plant/cell room and not by chemical since multiple chemicals may be manufactured in the same process line.

Copy ____ of ____

(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)
Plant Type	**Plant Name**	**Year Production Began**	**Operating in 2006 (Yes or No)?**	**Reasons for Idled Lines if Applicable (Enter Code)**	**Are there plans to shutdown or idle this plant?**	**Section of Questionnaire to be Completed***
Chlorine Plants						
Ex. CL-HG	*Ex. Chlorine Plant A*	*Ex. 1980*	*Ex. YES*	*Ex. NA*	*Ex. Yes, plant will be permanently shutdown in March 2007.*	*2A*
						2A
						2A
						2A
						2A
Chlorinated Hydrocarbon Plants						
Ex. CH	*Ex. Vinyls Plant A*	*Ex. 1980*	*Ex. YES*	*Ex. NA*	*Ex. No.*	*2B*
						2B
						2B
						2B
						2B
						2B
PVC						
Ex. PVC	*Ex. PVC – 1*	*Ex. 1980*	*Ex. YES*	*Ex. NA*	*Ex. No.*	*2C*
						2C
						2C
						2C
						2C

*Complete a copy of the specified questionnaire section for each plant. For example, if you operate two chlor-alkali plants, you will complete two copies of Section 2A. Please note that you are completing Section 2 by plant and not by chemical since multiple chemicals may be manufactured by the same production plant.

CBI?
☐ Yes

1-8. Please review the following example diagram (Figure 1). Attach one or more general block diagrams that show the CCH manufacturing facility production process(es) for each plant listed in Question 1-7 as shown in Figure 1. Specific instructions are provided in the checklist below. The diagram should have a similar level of detail as EPA's Example Figure 1. You may use an existing diagram and mark the additional required information on the diagram by hand.

Provide as many diagrams as necessary to convey the information requested in the checklist below. Number each block diagram at the upper right corner; the first block diagram in Section 1 should be numbered 1-1, the second 1-2, etc. Also include the EPA-designated facility ID number (as shown on the questionnaire cover page) in the upper right hand corner.

Provide the block diagram number(s) assigned to the production process flow diagram(s) on the line below.

Block Diagram(s) - _____

Specific instructions for including the block diagrams are provided below. **Flow rates are NOT required on this diagram(s).**

Block Diagram Checklist

Be sure to…

☐ Write the block diagram number(s) and your EPA-designated facility ID number on each diagram.

☐ Include a block for each ***plant*** listed in Question 1-7. Label each plant with a unique name.

☐ Include the raw materials used in each ***plant*** (e.g., sodium chloride for chlor-alkali; ethylene and chlorine for ethylene dichloride; etc.).

☐ Include the chemicals manufactured and the destination of the chemical (sold or used onsite).

☐ Label the streams included on the diagram.

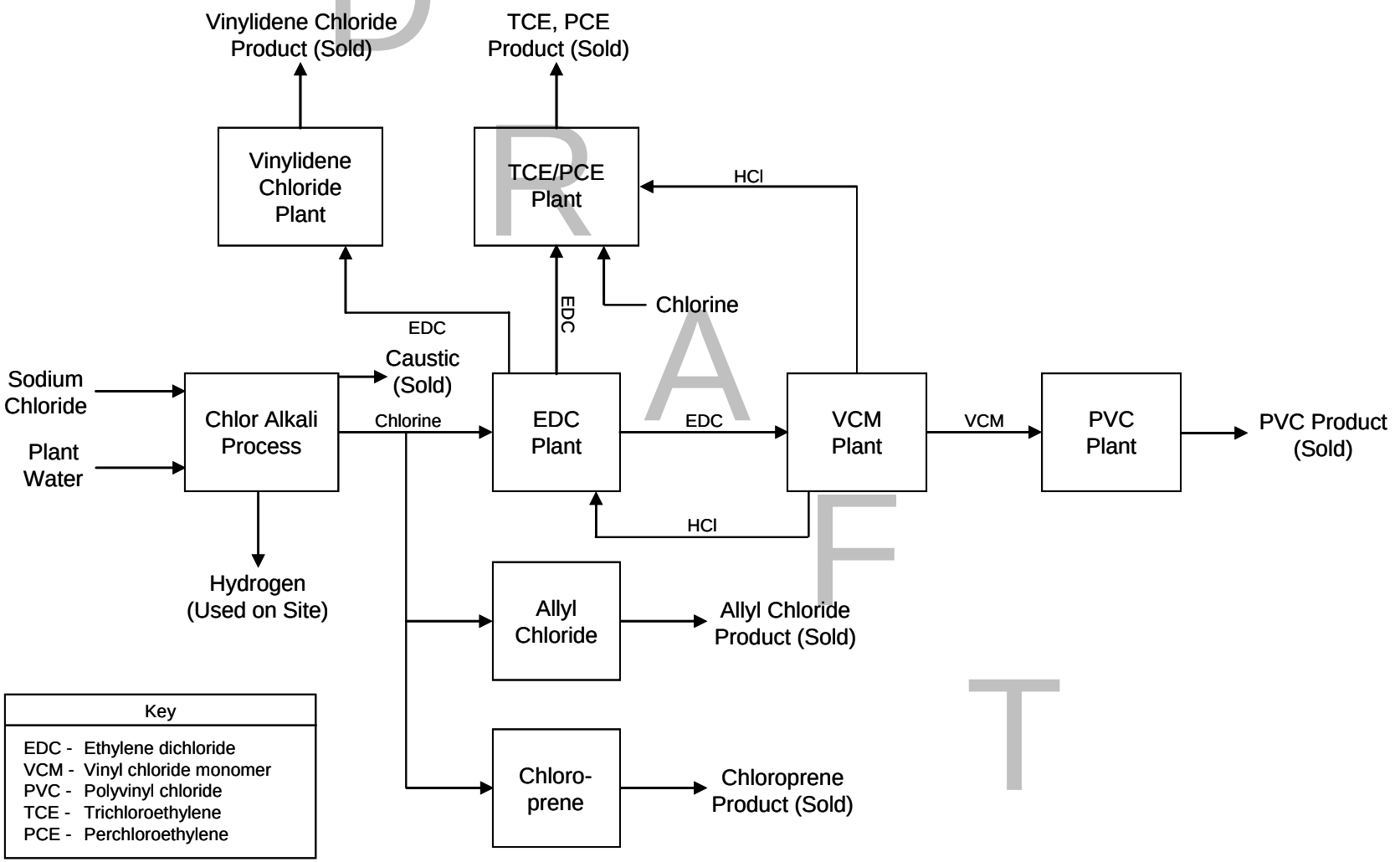
☐ Provide a key if you use any abbreviations or acronyms.

If you believe that a diagram should be treated as confidential, stamp it "Confidential" or write "Confidential" or "CBI" across the top. If any diagram is not marked "Confidential", it will be considered nonconfidential under 40 CFR Part 2, Subpart B.

Review:
If any of the statements above were not checked, please revise the block diagram(s) and ensure all statements have been checked.

Figure 1. Example General Facility Block Diagram

Block Diagram 1-1
Facility ID: _____



1-9. Which of the following effluent guidelines Point Source Categories apply to this ***facility***? Check (✓) ALL that apply.

☐ **40 CFR Part 414**, Organic Chemicals, Plastics, and Synthetic Fibers,
Subparts _____
(Please Specify Subparts)

☐ **40 CFR Part 415**, Inorganic Chemicals Manufacturing,
Subparts _____
(Please Specify Subparts)

☐ **40 CFR Part 421**, Nonferrous Metals Manufacturing
Subparts _____
(Please Specify Subparts)

☐ **40 CFR Part 439**, Pharmaceutical Manufacturing
Subparts _____
(Please Specify Subparts)

☐ **40 CFR Part 455**, Pesticide Chemicals
Subparts _____
(Please Specify Subparts)

☐ Other (please indicate) _____

CBI? ☐ Yes

1-10. Does the facility discharge ***process wastewater*** from operations in the ***CCH manufacturing segments*** (either ***intermittently*** or ***continuously***) directly to a receiving stream via a ***NPDES permit***?

☐ Yes
☐ No *(Skip to Question 1-12)*

CBI? ☐ Yes

1-11. Please provide your permit number, the expiration date, and an indication of whether the facility is currently in the process of renewing or modifying its permit.

NPDES Permit Number: _____

Expiration Date: _____

Currently Renewing/Modifying:

☐ Yes
☐ No

1-12. Does the facility discharge ***process wastewater*** from operations in the ***CCH manufacturing segments*** to a publicly or privately owned treatment works (***POTW*** or ***PrOTW***) or other facility?

☐ Yes
- ☐ POTW. Provide POTW NPDES Permit number: _____
- ☐ PrOTW. Provide PrOTW NPDES Permit number: _____
- ☐ Other facility. Provide facility name and NPDES Permit number: _____

☐ No *(Skip to Question 1-14)*

1-13. Provide the ***POTW***, ***PrOTW***, or ***facility*** name, address, primary contact, and phone number (if applicable).

_____
POTW/PrOTW Name

_____
POTW/PrOTW Address

_____ _____ _____
POTW/PrOTW City State Zip Code

_____ (____) _____
Primary Contact Name Telephone Number

1-14. Does the facility discharge ***process wastewater*** from operations in the ***CCH manufacturing segments*** to destinations other than ***NPDES-permitted*** outfalls, ***POTW***, ***PrOTW***, or ***facility*** already described in Questions 1-11and 1-13? Check (✓) ALL that apply.

- ☐ Centralized Waste Treater (CWT)
- ☐ Deep-well ***Injection***
- ☐ ***Contract Haul***
- ☐ Evaporative Pond
- ☐ ***Recycle***/Reuse
- ☐ Other *(specify)*: _____

1-15. Is ***process wastewater*** from operations in the ***CCH manufacturing segments*** treated before ***discharge***?

- ☐ Yes
- ☐ No

1-16. Have you planned any major changes in the destination of ***process wastewater*** discharges from your facility? Note that this question only refers to projects that would change the destination of your facility's process wastewater discharge.

- ☐ Yes
- ☐ No *(Skip to Question 1-17)*

Please list in the table below any projects that are currently under construction or projects for which capital has been allocated. Indicate the process wastewater discharge current and new planned destinations (e.g., ***POTW***, ***surface water***, ***recycle*** onsite, another ***facility***) and the year scheduled or planned below.

Discharge Description	Current Destination	New Destination	Schedule/Planned Year

CBI? ☐ Yes

1-17. Are you aware of any studies that characterize the general conditions of ***surface waterbody***(ies) that receive ***process wastewater*** discharges from your facility and/or that characterize the environmental behavior of process wastewater discharges from your facility (e.g., watershed studies, environmental impact studies, bioassays, etc.)?

☐ Yes
☐ No *(Skip to Question 1-19)*

CBI? ☐ Yes

1-18. Indicate the following information about the characterization studies, if known. If there are additional studies, please provide the information in the Comments Section.

Title: _____

Publication Date: ____/____/____

Sponsoring Agency: _____

Receiving Water Name: _____

CBI? ☐ Yes

1-19. Please complete one line in the following table for each ***unit operation*** used to treat source water prior to use in the plant. Note that you should complete one line of the table for each unit operation since water with different levels of treatment may be used in your plant.

- Column I – Enter your site's name for the plant or process line.
- Column II – Enter the raw water source.
- Column III – Source of influent to treatment unit (may be another treatment unit).
- Column IV – Enter the type of unit operation.
- Column V – Enter the chemicals added to this unit operation.
- Column VI – Enter the destination of the treated water from this unit. Note that this might be another unit operation.

(I)	(II)	(III)	(IV)	(V)	(VI)
Plant or Process Line	**Raw Water Source**	**Source of Influent to Unit**	**Unit Operation**	**Chemicals Added**	**Destination of Treated Water**
Ex. Utilities 1	*Ex. MS River*	*Ex. MS River*	*Ex. Clarifier*	*Ex. Polymer*	*Ex. Sand filter*
Ex. Utilities 1	*Ex. MS River*	*Ex. Clarifier*	*Ex. Sand Filter*		*Ex. Industrial water to cooling towers and process area washdown and ion exchange*
Ex. Utilities 1	*Ex. MS River*	*Ex. Sand Filter*	*Ex. Ion Exchange*		*Ex. PVC*

Copy ____ of ____

COMMENTS FOR SECTION 1: GENERAL FACILITY INFORMATION

Cross reference your comments by question number and indicate the confidential status of your comment by checking (✓) the box in the column titled "CBI" (Confidential Business Information). If you need additional space, photocopy this page before writing on it, and number each copy in the space provided in the upper right corner.

Question Number	CBI?	Comment
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	

SECTION 2 – MANUFACTURING PROCESS INFORMATION

GENERAL INSTRUCTIONS

This section of the questionnaire is organized into multiple subsections based on manufacturing operations. **You only need to complete those subsections that apply to this facility.** Complete a copy of the appropriate subsection for each plant listed in Question 1-7. Also, please complete Section 2D for any air pollution control devices that control emissions from ***CCH manufacturing segments*** processes. The following is a list of the subsections:

- 2A: Chlorine
- 2B: Chlorinated Hydrocarbons
- 2C: Polyvinyl Chloride (PVC)
- 2D: Incineration and Air Pollution Control

Carefully read the instructions that appear in each subsection and refer to the Definitions Section for terms that are used in this questionnaire. Sections may need to be photocopied before responding if your facility has multiple plants or cell rooms of the same type. For copied sections, number the copies using the space provided at the top of the pages.

Indicate information that should be treated as confidential by checking the Confidential Business Information (CBI) box next to each question number with responses containing CBI. Any response where "CBI" is not checked will be considered nonconfidential. Refer to the instructions given in the CONFIDENTIAL BUSINESS INFORMATION section on page iii for additional information regarding EPA's confidentiality procedures set forth in 40 CFR Part 2, Subpart B.

EPA requires a block diagram for each plant on site. You are **NOT** required to create a new block diagram if an existing diagram will suffice.

Section 2A. Chlorine

Technical Information Helpline:

DO YOU MANUFACTURE CHLORINE AT THIS ***FACILITY***?

☐ Yes
☐ No *(Skip to Section 2B)*

For EACH operating chlorine ***plant***/cell room listed in Question 1-7 as operating in 2006, complete a copy of the entire Section 2A. Number each copy of Section 2A in the space provided in the upper right-hand corner.

Questions 2A-1 through 2A-42 request information on the manufacturing processes at this plant.

Question 2A-43 requires you to list all sources of ***process wastewater*** at this plant.

Questions 2A-44 through 2A-53 request information on in-process ***pollution prevention***, ***pretreatment***, or modifications at this plant.

A comment page is included at the end of this section.

CBI? ☐ Yes

2A-1. Indicate the facility's name for this chlorine ***plant***/cell room: _____

CBI? ☐ Yes

2A-2. Please review the following example block diagram (Example 2A-1). Attach a block diagram that shows the chlorine process(es) and the water use associated with this chlorine ***plant***/cell room. Specific instructions for the diagram are provided in the checklist below. The diagram should have a similar level of detail as EPA's Example 2A-1. You may use an existing diagram and mark the additional required information on the diagram by hand.

Provide as many diagrams as necessary to convey the information requested in the checklist below. Number each block diagram at the upper right corner; the first block diagram in Section 2A should be numbered 2A-1, the second 2A-2, etc. Also include the EPA-designated facility ID number (as shown on the cover page of Part A) in the upper right hand corner.

Provide the block diagram number(s) assigned to the chlorine diagram(s) on the line below.

Block Diagram(s) - _____

Block Diagram Checklist

Be sure to...

☐ Write the block diagram number, your EPA-designated facility ID number, and the ***plant***/cell room name(s) on the diagram.

☐ Include all ***unit operations*** in the chlorine manufacturing process (e.g., ***brine processing***, ***electrolysis***, ***chlorine processing***, caustic processing, hydrogen purification, ***incineration***, and ***pollution prevention***).

☐ Include the raw materials used in the manufacture of chlorine (e.g., brine, water).

☐ Identify the chemicals manufactured (e.g., chlorine, caustic, hydrogen).

☐ Identify influent streams for the ***unit operations*** included on the chlorine ***plant***/cell room diagram. Influent streams may include raw materials and catalysts. When sources are not shown on the diagram (i.e., the stream is entering from a location not shown on the diagram), describe the source (e.g., "from river") and add the block diagram number, when appropriate, where the stream's previous location can be seen.

☐ Identify effluent streams for the ***unit operations*** included on the chlorine ***plant***/cell room diagram. Effluent streams may include ***process wastewater***, ***sludges***, and chemicals manufactured. When destinations are not shown on the diagram (i.e., the stream is exiting to a location not shown on the diagram), describe destination (e.g., "to wastewater treatment" or "to solid waste treatment") and add the block diagram number, when appropriate, where the stream's next location can be seen.

☐ Include the average 2006 flow rates for the ***process wastewater*** and waste streams on the diagram (in gpm or gpd).

☐ Identify the final destination of the ***process wastewater*** and waste streams (e.g., process wastewater to ***wastewater treatment*** or ***POTW*** or ***surface waters***, solid and/or hazardous wastes to offsite ***landfills***).

☐ Include ***air pollution control*** systems (e.g., incinerators and wet gas scrubbers). Show and label the influent and effluent streams from the air pollution control system (e.g., vent gases from process into incinerator, wastewater from scrubber).

☐ Indicate ***recycle*** or reuse of ***process wastewater*** or other streams (e.g., reuse of chlorine condensates).

☐ Include any in-process ***wastewater treatment*** or ***pollution prevention*** technologies (e.g., process wastewater filters, stream strippers). Please review the definitions of wastewater treatment and pollution prevention to determine if a particular unit should be included. Show and label the influent and effluent streams from the ***treatment units***.

☐ Indicate the number of identical ***unit operations*** if greater than one. For example, you may use three identical incinerators. You can illustrate them as one box but denote "Incinerators (3)."

If you believe that the diagram should be treated as confidential, stamp it "Confidential" or write "Confidential" or "CBI" across the top. If any diagram is not marked "Confidential", it will be considered nonconfidential under 40 CFR Part 2, Subpart B.

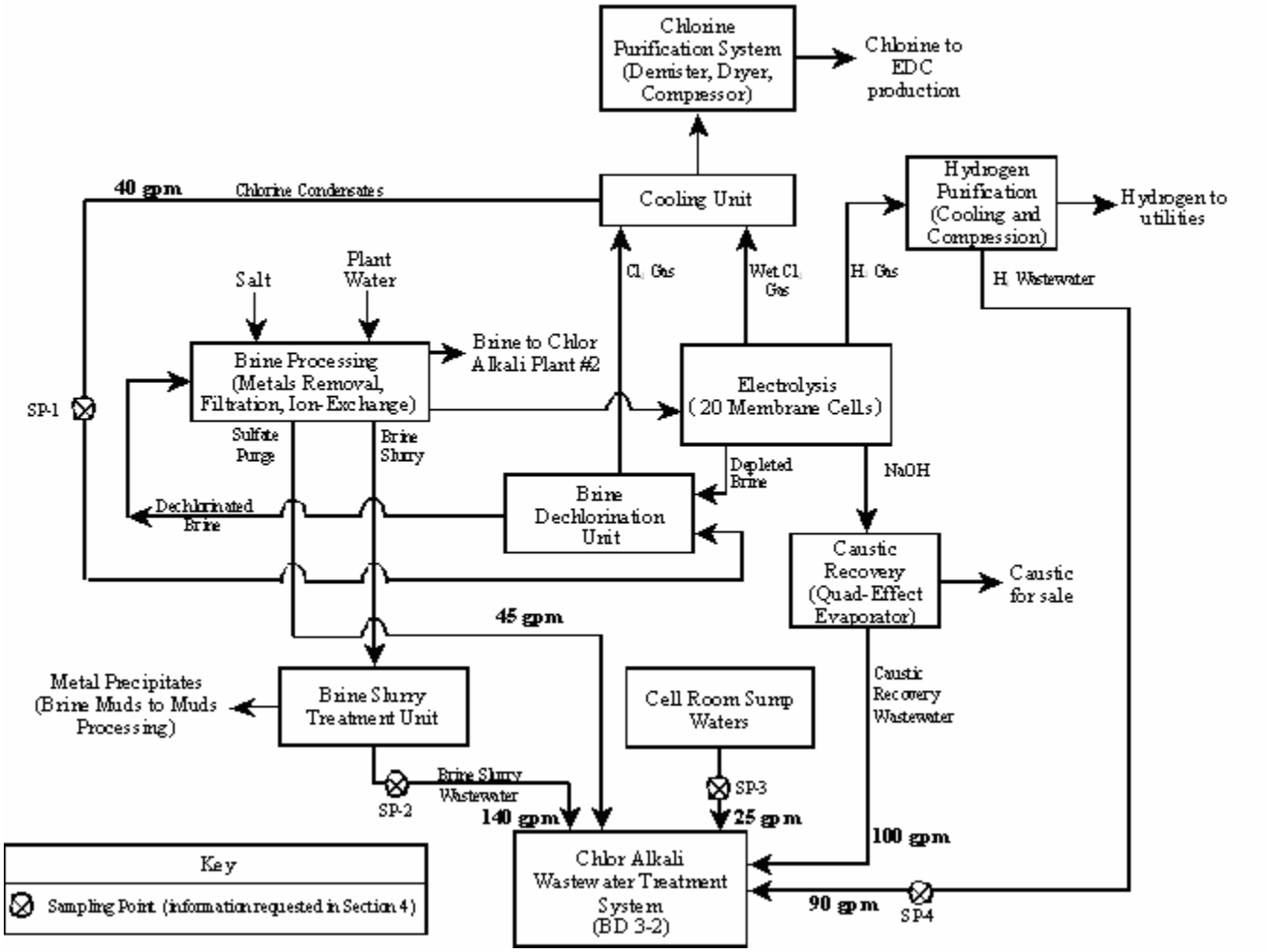
Review:
If any of the statements above were not checked, please revise the block diagram(s) and ensure all statements have been checked.

Section Copy ____ of ____

Example 2A-1 Chlor-Alkali Block Diagram (Membrane Cell)

Block Diagram 2A-1

Facility ID _____



CBI? ☐ Yes

2A-3. Provide the chlorine production for the past five years (2002-2006).

Year	Actual Production (tons per year)	Production Capacity (tons per year)	Operating Schedule	
			Typical Hours/Day	Days/Year
2002				
2003				
2004				
2005				
2006				

CBI? ☐ Yes

2A-4. What type of caustic is manufactured at this ***plant***/cell room?

- ☐ Sodium Hydroxide
- ☐ Potassium Hydroxide
- ☐ Other *(specify)*: _____
- ☐ None

The remainder of Section 2A requests information on the following aspects of your ***chlor-alkali process***: ***brine processing***, ***electrolysis*** (divided by cell type), ***chlorine processing***, hydrogen and caustic ***recovery***, and cell renewal.

Questions 2A-5 through 2A-8 request information on *brine processing.*

CBI? ☐ Yes

2A-5. Is the brine treated to remove ***impurities*** prior to use in the ***electrolytic cell***?

- ☐ Yes
  - ☐ On site
  - ☐ Purchased brine is prepurified, no onsite treatment *(Skip to Question 2A-9)*
- ☐ No *(Skip to Question 2A-9)*

CBI? ☐ Yes

2A-6. What type of treatment is used? Check (✓) ALL that apply.

- ☐ Acidification
- ☐ Chemical precipitation
- ☐ Filtration
- ☐ Ion exchange
- ☐ Other *(specify)*: _____
- ☐ Other *(specify)*: _____

CBI? ☐ Yes

2A-7. What chemicals are added during ***brine processing***? Check (✓) ALL that apply.

- ☐ Calcium chloride
- ☐ Hydrochloric acid
- ☐ Magnesium chloride
- ☐ Potassium chloride
- ☐ Sodium carbonate
- ☐ Sodium chloride
- ☐ Sodium hydroxide (caustic soda)
- ☐ Sulfuric acid
- ☐ Other *(specify)*: _____

CBI? ☐ Yes

2A-8. Is ***process wastewater*** generated from processing the brine?

- ☐ Yes *(Please remember to list all **process wastewater** streams in Question 2A-43)*
- ☐ No

Questions 2A-9 through 2A-16 request information on *electrolysis* via the *membrane cell*.

CBI? ☐ Yes **2A-9.** Does your chlor-alkali ***plant***/cell room use a ***membrane cell***?

- ☐ Yes
- ☐ No *(Skip to Question 2A-17)*

CBI? ☐ Yes **2A-10.** What is the cathode material?

- ☐ Nickel
- ☐ Other *(specify)*: _____

CBI? ☐ Yes **2A-11.** What is the anode material?

- ☐ Graphite
- ☐ Titanium
- ☐ Other *(specify)*: _____

CBI? ☐ Yes **2A-12.** Do you process the cell anolyte from the ***electrolytic cell*** to remove or ***recover*** chlorine?

- ☐ Yes
- ☐ No *(Skip to Question 2A-16)*

CBI? ☐ Yes **2A-13.** What streams feed the dechlorination/neutralization process? Check (✓) ALL that apply.

- ☐ Cell anolyte
- ☐ ***Chlorine condensates***
- ☐ Other *(specify)*: _____

CBI? ☐ Yes **2A-14.** What type of neutralization or dechlorination is performed?

- ☐ Vacuum dechlorination
- ☐ Chemical dechlorination *(specify)*: _____
- ☐ Other *(specify)*: _____

CBI? ☐ Yes **2A-15.** Indicate the destination of the dechlorinated cell anolyte.

- ☐ Recycled to ***brine processing***
- ☐ Recycled directly to the ***electrolytic cell***
- ☐ Other *(specify)*: _____

CBI? ☐ Yes **2A-16.** Is ***process wastewater*** generated from the membrane cell?

- ☐ Yes *(Please remember to list all **process wastewater** streams in Question 2A-43)*
- ☐ No

Questions 2A-17 through 2A-21 request information on *electrolysis* via the *diaphragm cell*.

CBI? ☐ Yes

2A-17. Does your chlor-alkali ***plant***/cell room use a ***diaphragm cell***?

- ☐ Yes
- ☐ No *(Skip to Question 2A-22)*

CBI? ☐ Yes

2A-18. What type of diaphragm cell is used?

- ☐ Asbestos diaphragm
- ☐ Non-asbestos diaphragm *(specify diaphragm material)*: _____

CBI? ☐ Yes

2A-19. What is the cathode material?

- ☐ Nickel
- ☐ Other *(specify)*: _____

CBI? ☐ Yes

2A-20. What is the anode material?

- ☐ Graphite
- ☐ Titanium
- ☐ Other *(specify)*: _____

CBI? ☐ Yes

2A-21. Is ***process wastewate***r generated from the diaphragm cell?

- ☐ Yes *(Please remember to list all **process wastewater** streams in Question 2A-43)*
- ☐ No

Questions 2A-22 through 2A-28 request information on *electrolysis* via the *mercury cell*.

CBI? ☐ Yes

2A-22. Does your chlor-alkali ***plant***/cell room use a ***mercury cell***?

- ☐ Yes
- ☐ No *(Skip to Question 2A-29)*

CBI? ☐ Yes

2A-23. Does the spent/depleted brine from the ***electrolytic cell*** undergo dechlorination?

- ☐ Yes
- ☐ No *(Skip to Question 2A-27)*

CBI? ☐ Yes

2A-24. What type of dechlorination is used?

- ☐ Vacuum dechlorination *(Skip to Question 2A-26)*
- ☐ Chemical dechlorination
- ☐ Other *(specify)*: _____

CBI? ☐ Yes

2A-25. What chemicals are added to the dechlorination process? Check (✓) ALL that apply.

- ☐ Hydrochloric acid
- ☐ Sulfuric acid
- ☐ Sodium hydroxide
- ☐ Sodium sulphite
- ☐ Other *(specify)*: _____

CBI? ☐ Yes

2A-26. What streams feed the dechlorination process? Check (✓) ALL that apply.

- ☐ Brine
- ☐ ***Chlorine condensates***
- ☐ Other *(specify)*: _____

CBI? ☐ Yes

2A-27. How do you ***recover*** mercury from your process?

- ☐ During ***end-of-pipe wastewater treatment*** *(Please remember to include mercury recovery units in Question 3-1 in Section 3)*
- ☐ Using in-process treatment technologies *(Please remember to include mercury recovery units in Question 2A-46)*
- ☐ Other method *(describe)*: _____

CBI? ☐ Yes

2A-28. Is ***process wastewater*** generated from the mercury cell?

- ☐ Yes *(Please remember to list all **process wastewater** streams in Question 2A-43)*
- ☐ No

Questions 2A-29 through 2A-34 request information on *chlorine processing*.

CBI? ☐ Yes

2A-29. What type of piping do you use from the ***electrolytic cell*** through chlorine drying? Check (✓) ALL that apply.

- ☐ PVC
- ☐ Chlorinated PVC (CPVC)
- ☐ Fiberglass-reinforced plastic (FRP)
- ☐ Other *(specify)*: _____

CBI? ☐ Yes

2A-30. What is the temperature range of the cell gas inside the ***electrolytic cell***?

_____ °F to _____ °F

CBI? ☐ Yes

2A-31. Do you process the chlorine gas exiting the ***electrolytic cell***?

- ☐ Yes
  - ☐ Non-contact cooling
  - ☐ Passing through demisters
  - ☐ Drying using sulfuric acid towers
  - ☐ Drying using other method *(specify)*: _____
  - ☐ Liquefaction
  - ☐ Other *(specify)*: _____
- ☐ No

CBI? ☐ Yes

2A-32. Is the ***chlorine condensate*** stream treated prior to ***discharge*** or ***recycle***? Please remember to include this stream in Question 2A-43.

- ☐ Yes
- ☐ No *(Skip to Question 2A-34)*

CBI? ☐ Yes

2A-33. Indicate the type of treatment used on the ***chlorine condensate*** stream. Check (✓) ALL that apply.

- ☐ Dechlorination
- ☐ Stripping *(specify type, e.g., steam)*: _____
- ☐ Filtration *(specify type, e.g., carbon)*: _____
- ☐ Other *(specify)*: _____

CBI? ☐ Yes

2A-34. Indicate the destination of the ***chlorine condensate*** stream. Check (✓) ALL that apply. Please remember to include this stream in Question 2A-43.

- ☐ Recycled to ***brine processing***
- ☐ Reused in cooling towers
- ☐ Discharged
- ☐ Other *(specify)*: _____

Questions 2A-35 through 2A-37 request information on hydrogen *recovery*.

CBI? ☐ Yes

2A-35. Do you perform hydrogen purification in conjunction with chlorine manufacture?

- ☐ Yes
- ☐ No *(Skip to Question 2A-38)*

CBI? ☐ Yes

2A-36. Indicate the type of processing performed during hydrogen purification. Check (✓) ALL that apply.

- ☐ Contact Cooling
- ☐ Non-contact Cooling
- ☐ Compression
- ☐ Other *(specify)*: _____

CBI? ☐ Yes

2A-37. Is ***process wastewater*** generated from hydrogen purification?

- ☐ Yes *(Please remember to list all **process wastewater** streams in Question 2A-43)*
- ☐ No

Questions 2A-38 through 2A-40 request information on caustic *recovery*.

CBI? ☐ Yes

2A-38. Do you perform caustic processing in conjunction with chlorine manufacture?

- ☐ Yes
- ☐ No *(Skip to Question 2A-41)*

CBI? ☐ Yes

2A-39. Indicate the type of caustic processing. Check (✓) ALL that apply.

- ☐ Cooling
- ☐ Crystallization
- ☐ Evaporation *(specify number of effects)*: _____
- ☐ Filtration
- ☐ Precipitation
- ☐ Other *(specify)*: _____

CBI? ☐ Yes

2A-40. Is ***process wastewater*** generated from caustic processing?

- ☐ Yes *(Please remember to list all **process wastewater** streams in Question 2A-43)*
- ☐ No

Questions 2A-41 through 2A-42 request information on cell renewal.

CBI?
☐ Yes

2A-41. Is ***process wastewater*** generated from cell renewal (e.g., membrane cleaning, renewing diaphragm)?

☐ Yes *(Please remember to list all **process wastewater** streams in Question 2A-43)*
☐ No *(Skip to Question 2A-43)*

CBI?
☐ Yes

2A-42. Indicate any treatment units used to treat cell renewal ***process wastewater*** prior to commingling with other process wastewater. Check (✓) ALL that apply. Please remember to include these units in the plant/cell room diagram and Question 2A-46 or the block diagram(s) and detailed questions in Section 3.

☐ Filtration
☐ Belt press
☐ Other *(specify)*: _____
☐ None

CBI?
☐ Yes

2A-43. For each ***process wastewater*** stream related to chlorine production at this ***plant***/cell room, complete a row in the table on the following page. At the top of each table, specify the associated plant/cell room name (from Question 1-7). Include the following in the table:

- Name of each process wastewater stream.
- Corresponding block diagram where the process wastewater source is depicted.
- Average daily flow rate and operating days per year.
- Process wastewater destination code and associated details from the table below.

If you need additional rows, copy the table as necessary. Make sure all process wastewater streams on block diagram and noted in Questions 2A-8, 16, 21, 28, 32, 37, 40, and 41 are listed on the table.

Process wastewater streams for chlorine plant/cell rooms may include, but are not limited to:

- Wastewater generated from ***caustic recovery*** (e.g., condensate and sulfate purge).
- ***Chlorine condensate***.
- Wastewater generated from ***brine processing***.
- Cell anolyte.
- Hydrogen processing wastewater (e.g., condensate).
- Incinerator wet air pollution control water.
- Contact cooling water.
- Equipment cleaning and maintenance water.
- ***Contact stormwater***.

For the purpose of this questionnaire, process wastewater does not includes non-routine streams such as water from safety showers, water dripping from a hose during a disconnect, or water from fire-fighting or other emergency systems.

Note that you should include all process wastewater streams including streams that may be reused or ***recycled***. For example, the chlorine condensate stream may be recycled to the electrolytic cell. Also, caustic recovery processes may have process wastewater that is reused in cooling towers.

Destination Codes

Destination Description	Code	Process Wastewater Destination Details
Sent to In-process ***treatment unit*** (i.e. ***pollution prevention*** or ***pretreatment*** technologies).	IP	Provide name of treatment unit (from the block diagram)
Wastewater treatment system	WWT	Provide name of wastewater treatment system
Discharge without treatment by pipeline, sewer, or other conveyance to ***surface water***	SW	Provide name of outfall
Discharge to ***POTW***, no treatment:	POTWRAW	Provide name of POTW
Discharge to ***PrOTW***, no treatment:	PrOTWRAW	Provide name of PrOTW
Zero discharge or alternative ***disposal*** method	ZEROALT	Describe method (attach additional pages as necessary)
Recycle to process	RECYC	Describe where in the process the stream is recycled
Reused in cooling towers	COOLW	
Deep-well ***injection***	DWELL	
Evaporation	EVAP	
Contract hauled	CHAUL	
Other	OTHER	Describe (attach additional pages as necessary)

Section Copy ____ of ___

Question 2A-43, continued

Process Wastewater Flows and Destination Table

Plant/cell room Name (from Question 1-7): _____

Example Process Wastewater Table:

Name of Process Wastewater Stream	Block Diagram ID	Average Flow Rate	Destination Code	Associated Destination Information (See Destination Codes Table)
Examples:				
Brine Processing Wastewater	*2A-1*	*201,600 gpd, 350 dpy*	*WWT*	*Chlor-Alkali Wastewater Treatment System*
Caustic Recovery Wastewater – Sulfate Purge	*2A-1*	*8,000 gpd, 350 dpy*	*WWT*	*Chlor-Alkali Wastewater Treatment System*
Caustic Condensate	*2A-1*	*64,800 gpd, 350 dpy*	*COOLW*	
Cell Regeneration Wastewater	*2A-1*	*5,000 gpd, 50 dpy*	*WWT*	*Chlor-Alkali Wastewater Treatment System*
Hydrogen Purification Wastewater	*2A-1*	*129,600 gpd, 350 dpy*	*WWT*	*Chlor-Alkali Wastewater Treatment System*
Chlorine Condensate Wastewater	*2A-1*	*57,600 gpd, 350 dpy*	*RECYC*	*Brine Processing*
Contact Stormwater from Chlorine Plant	*2A-1*	*2,000 gpd, 15 dpy*	*WWT*	*Chlor-Alkali Wastewater Treatment System*
Cell Anolyte	*2A-1*	*1,000 gpd, 250 dpy*	*RECYC*	*Brine Processing*

Name of Process Wastewater Stream	Block Diagram ID	Average Flow Rate	Destination Code	Associated Destination Information (See Destination Codes Table)
		_____ *gpd,* _____ *dpy*		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		

CBI? ☐ Yes

2A-44. List any waste streams from Question 2A-43 that are known by the ***facility*** to be sources of ***dioxins***.

Ex: Chlorine Condensates, Sulfate Purge, Source Water

CBI? ☐ Yes

2A-45. Did you indicate in Question 2A-43 that any ***process wastewater*** streams are sent to in-process ***pollution prevention*** or ***pretreatment*** technologies (Destination Code IP)?

☐ Yes
☐ No *(Skip to Question 2A-50)*

CBI? ☐ Yes

2A-46. In the table below, check the in-process unit operations used for ***pollution prevention*** or ***pretreatment*** in this ***plant***/cell room. Provide the following additional information in the table:

- Indicate the number of units.
- Indicate whether the unit's intended purpose is for dioxin removal. If the unit is intended for dioxin removal, please provide any sampling data, including any data used to design the unit, in Section 4.
- If the treatment unit is not intended for dioxin removal, describe the purpose of the unit.

For each unit checked, please complete the detailed questions in 2A-47, 2A-48, or 2A-49.

	Unit Operation	Number of Operating Units	Is Unit Intended to Remove Dioxin?	Treatment Purpose	If this Operation is Performed, Complete the Following Question
☐	Filtration – Activated Carbon		☐ Yes ☐ No		2A-47
☐	Filtration – Membrane		☐ Yes ☐ No		2A-47
☐	Filtration – Multimedia		☐ Yes ☐ No		2A-47
☐	Filtration – Sand		☐ Yes ☐ No		2A-47
☐	Filtration – Other		☐ Yes ☐ No		2A-47
☐	Steam Stripper		☐ Yes ☐ No		2A-48
☐	Other		☐ Yes ☐ No		2A-49

For each ***unit operation*** checked in Question 2A-46, please complete the applicable questions from 2A-47 through 2A-49 for each operating unit. You may need to make additional copies of these questions for multiple technologies. Note that these technologies should be included on the block diagram(s) you provided in Question 2A-2. Number each copy of this question in the upper right-hand corner.

CBI?
☐ Yes

2A-47. For each in-process filter unit used for ***pollution prevention*** or ***pretreatment*** in this ***plant***/cell room, please complete one copy of the following question.

FILTRATION: MEMBRANE, MULTI-MEDIA, SAND, OR ACTIVATED CARBON

a. Provide the treatment unit name from the block diagram..... _____

b. Provide the year of installation of the unit..... _____

c. Provide the process wastewater streams from Question 2A-43 that enter this unit ..... _____ _____ _____

_____ _____ _____

d. Provide the name(s) and flow rates of any additional streams that enter this unit including any non-CCH streams. Check the box if there are no other influent streams.

☐ No additional influent streams
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm

e. Provide the destination of the treated process wastewater.....

☐ ***End-of-Pipe Wastewater Treatment System*** *(provide name)*: _____
☐ ***Discharge*** to ***surface water***
☐ Discharge to ***POTW*** or ***PrOTW***
☐ ***Zero discharge*** or alternative ***disposal*** method
☐ ***Recycle*** to process
☐ Other *(specify)*: _____

f. Indicate the mode of operation for the unit .....

☐ ***Batch***
☐ Continuous

g. Provide the average daily flow rate for the unit in 2006 ..... _____ gal/min

h. Provide the typical daily unit operating hours per day and days per year for 2006..... _____ hrs/day **AND**

_____ days/yr

i. Provide the ***design capacity flow rate*** for the unit ..... _____ gal/min

j. Provide the unit's annual energy requirement and an indication of the type of data..... _____ kWh

☐ Manufacturer's Specification
☐ 2006 Energy Use

k. What type of filtration is performed in this unit. Check (✓) ALL that apply.....

☐ Membrane
☐ Multi-media
☐ Sand
☐ Activated Carbon
☐ Other *(specify):* _____

l. Provide the unit's operating pressure ..... _____ psi

FILTRATION: MEMBRANE, MULTI-MEDIA, SAND, OR ACTIVATED CARBON

m. Provide the filter cross-sectional flow rate ..... _____ gal/ft^2

n. Provide the volume of backwash water ..... _____ gal/day

_____ dpy

o. Indicate in the table below what chemicals, if any, are added to the filtration unit:

Chemical Name	Purpose	Addition Rate
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day

p. How is the spent media handled?..... ☐ Sent to the manufacturer for regeneration
☐ Regenerated on site
☐ Destination of regeneration wastewater _____
☐ No regeneration ***wastewater*** generated
☐ Sent to an offsite or onsite landfill
☐ Other *(specify)*: _____

q. How often is spent media removed, replaced, or regenerated?..... _____ times per year

r. How much spent media is removed, replaced, or regenerated?..... _____ tons per year

_____ gallons per year

CBI?
☐ Yes

2A-48. For each in-process steam stripper used for ***pollution prevention*** or ***pretreatment*** in this ***plant***/cell room, please complete one copy of the following question.

STEAM STRIPPER

a. Provide the treatment unit name from the block diagram ..... _____

b. Provide the year of installation of the unit ..... _____

c. Provide the process wastewater streams from Question 2A-43 that enter this unit ..... _____ _____ _____
_____ _____ _____

d. Provide the name(s) and flow rates of any additional streams that enter this unit including any non-CCH streams. Check the box if there are no other influent streams.
☐ No additional influent streams
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm

e. Provide the destination of the treated process wastewater .....
☐ ***End-of-Pipe Wastewater Treatment System*** *(provide name)*: _____
☐ ***Discharge*** to ***surface water***
☐ Discharge to ***POTW*** or ***PrOTW***
☐ ***Zero discharge*** or alternative ***disposal*** method
☐ ***Recycle*** to process
☐ Other *(specify)*: _____

f. Provide the ***design capacity flow rate*** for the unit ..... _____ gal/min

g. Provide the average daily flow rate for the unit for 2006 ..... _____ gal/min

h. Provide the typical daily unit operating hours per day and days per year for 2006 ..... _____ hrs/day **AND**
_____ days/yr

i. Provide the unit's annual energy requirement and an indication of the type of data ..... _____ kWh
☐ Manufacturer's Specification
☐ 2006 Energy Use

j. Provide the percent of bottom stream that was ***recycled*** back to stripper feed in calendar year 2006 ..... _____ %

k. How are recovered organics handled? (Check (✓) all that apply) .....
☐ ***Recycled*** to process *(specify which)*: _____
☐ Used for onsite auxiliary fuel
☐ Sold
☐ ***Incinerated***
☐ Other *(specify):* _____

STEAM STRIPPER

l. Provide the following design and operating parameters:

Parameter	Design Value	Operating Range
Feed temperature	°F	°F
Bottoms temperature	°F	°F
Overhead temperature	°F	°F
Column operating pressure	psig	psig
Reflux ratio	%	%
Steam requirement	lb/hr	lb/hr
Steam temperature	°F	°F
Steam pressure	psig	psig
Annual energy requirement	kWh	kWh

m. Indicate column type ..... ☐ Packed
- ☐ Pall rings
- ☐ Rashing rings
- ☐ Berl saddles
- ☐ Intalox saddles
- ☐ Other *(specify)*: _____

☐ Tray
- ☐ Perforated sieve
- ☐ Bubble cap
- ☐ Valve
- ☐ Other *(specify)*: _____

☐ Number of trays *(specify)*: _____

n. Indicate in the table below what chemicals, if any, are added to the column:

Chemical Name	Purpose	Addition Rate
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day

CBI?
☐ Yes

2A-49. For any other processes used for ***pollution prevention*** or ***pretreatment*** in this ***plant***/cell room, please complete one copy of the following question.

OTHER _____

a. Provide the treatment unit name from the block diagram..... _____

b. Provide the year of installation of the unit..... _____

c. Provide the process wastewater streams from Question 2A-43 that enter this unit ..... _____ _____ _____

_____ _____ _____

d. Provide the name(s) and flow rates of any additional streams that enter this unit including any non-CCH streams. Check the box if there are no other influent streams.

☐ No additional influent streams
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm

e. Provide the destination of the treated process wastewater .....

☐ ***End-of-Pipe Wastewater Treatment System*** *(provide name)*: _____
☐ ***Discharge*** to ***surface water***
☐ Discharge to ***POTW*** or ***PrOTW***
☐ ***Zero discharge*** or alternative ***disposal*** method
☐ ***Recycle*** to process
☐ Other *(specify)*: _____

f. Indicate the mode of operation for the unit .....

☐ ***Batch***
☐ Continuous

g. Provide the typical daily unit operating hours per day and days per year for 2006.....

_____ hrs/day **AND**
_____ days/yr

h. Provide the unit's annual energy requirement and an indication of the type of data.....

_____ kWh

☐ Manufacturer's Specification
☐ 2006 Energy Use

i. Provide the unit capacity..... _____ gal

j. Provide the ***design capacity flow rate*** for the unit ..... _____ gal/min

k. Provide the average daily flow rate for the unit.. _____ gal/min

l. What is the target temperature for this unit?..... _____ ° Fahrenheit

m. What is the target pH for this unit? ..... _____

n. What is the purpose of this unit? ..... _____

o. Describe the mechanism of treatment ..... _____

OTHER _____

p. Indicate in the table below what chemicals, if any, are added to the column:

Chemical Name	Purpose	Addition Rate
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day

q. Is ***sludge*** collected directly from this unit? ..... ☐ Yes ☐ No

r. Does the unit have continuous sludge removal? ..... ☐ Yes *(Skip to Question t)* ☐ No

s. How often is sludge removed?..... _____ times per year

t. How much sludge was collected in 2006?..... _____ pounds

u. What is the percent solids of the sludge?..... _____ % solids

v. Is the sludge hazardous under RCRA? ..... ☐ Yes ☐ No

CBI?
☐ Yes

2A-50. Provide information on any modifications to your chlorine ***plant***/cell room to improve treatment system performance or reduce the generation of pollutants. Also include projects currently under construction or projects for which capital has been allocated. This may include the replacement, upgrade, or addition of one or more ***unit operations*** or ***treatment units***. For purposes of this question, do not include in-kind replacement of ancillary equipment as a modification. For each modification, provide the following:

- A description of the modification.
- A list of the streams affected by the modification.
- The destination of the affected streams.
- An indication of whether the unit's intended purpose is for dioxin removal. If the unit is intended for dioxin removal, please provide any sampling data, including any data used to design the unit in Section 4.
- If the modification is not intended for dioxin removal or has multiple purposes, describe the additional reasons for the modification (e.g., compliance with water quality limits).
- The date the projected started.
- The date the project was completed.
- The length of time the chlorine ***plant***/cell room was shutdown to implement the modification. If no shutdown or outage was necessary for the modification, write "0" or "zero" for the length of shutdown.

Description of Modification	Streams Affected	Destination of Affected Streams	Is Modification Intended to Reduce Dioxin?	Additional Reasons for Modification	Date Project Started	Date Project Completed	Length of Shutdown (days)
			☐ Yes ☐ No				
			☐ Yes ☐ No				
			☐ Yes ☐ No				
			☐ Yes ☐ No				
			☐ Yes ☐ No				

CBI?
☐ Yes

2A-51. Provide cost data for in-process ***unit operations*** or modifications identified in Questions 2A-47 through 2A-50 that were installed between 1992 - 2006. You are required to provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates on the comments page at the end of this section. For all costs, do not adjust for inflation.

You may need to make additional copies of this question if multiple modifications are listed. You should complete one copy of this question for each copy of Questions 2A-47 through 2A-49 and each row in Question 2A-50. Number each copy of this question in the upper right-hand corner.

a. For each treatment unit or modification, identify the project and provide cost information in the table below.

Project: _____

Type of Cost	Project	Cost	Year Cost Incurred
Direct	Purchased equipment (includes all equipment for the installation of the upgrade: mechanical equipment; electrical equipment; spare parts; freight charges; taxes; insurance; and duties)	$	
	Purchased equipment installation (includes installation of all equipment; electrical equipment; mechanical equipment; structural supports, insulation, and paint)	$	
	Instrumentation and control (includes purchase, installation, and calibration)	$	
	Piping (includes cost of pipe, pipe hangers, fittings, valves, insulation)	$	
	Buildings (buildings constructed to house treatment units, operator rooms, or other operations associated with the system; also includes plumbing, heating, ventilation, dust collection, air conditioning, lighting, telephones, intercoms, painting, sprinklers, fire alarms)	$	
	Site preparation (includes site clearing except major demolition, grading, roads, walking areas, fences)	$	
	Major site demolition (other than site preparation, see above)	$	
	Land (includes property costs and survey fees)	$	
Total Direct Costs		$	
Indirect	Engineering costs (includes process design and general engineering, drafting, cost engineering, consulting fees, supervision, inspection)	$	
	Construction expenses (includes temporary construction offices, roads, communications, fencing; construction tools and equipment; permits, taxes, insurance)	$	
	Contractor's fees	$	
	Contingency actually expended (to compensate for unpredictable events such as storms, floods, strikes, price changes, errors in estimates, design changes, etc.)	$	
Total Indirect Costs		$	
Total Capital Cost		$	

b. In the table below, itemize the purchased equipment and installation costs provided in Part (a) for each major piece of equipment. If the total costs for purchased equipment and installation in Question 2A-51(a) and (b) differ by a factor of 10% or more, use the comments page at the end of this section to explain the difference.

Project: _____

Major Piece of Equipment	Purchased Equipment Cost	Installation Cost	Year Cost Incurred
Ex. Membrane Filter	*$ 3,000*	*$ 250*	*2001*
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
SUBTOTAL of Major Equipment Cost	$	$	

CBI?
☐ Yes

2A-52. Provide annual operation and maintenance (O&M) cost data for in-process ***unit operations*** or modifications identified in Questions 2A-47 through 2A-50 that were installed between 1992 - 2006. For each project, complete the table below for the O&M costs incurred during the most current year of operation. You are required to provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates on the comments page at the end of this section. For all costs, do not adjust for inflation. If the first full year of operation is atypical or not representative of operation of this project, use the comments page at the end of this section to explain.

You may need to make additional copies of this question if multiple projects are listed. You should complete one copy of this question for each copy of Questions 2A-47 through 2A-49 and each row in Question 2A-50. Number each copy of this question in the upper right-hand corner.

Project: _____

Most current full year of operation (year): _____

Type of Cost	O&M Cost Category	Cost
Operation and Maintenance	Operating labor	$
	Maintenance labor	$
	Maintenance materials	$
	Chemicals	$
	Energy: gas	$
	Energy: electric	$
	Energy: oil	$
	Energy: other *(specify)*	$
	Hazardous Sludge Disposal	$
	Nonhazardous Sludge Disposal	$
	Other *(specify)*	$
	Other *(specify)*	$
	Other *(specify)*	$
	Other *(specify)*	$
Total Operation and Maintenance Cost		**$**

CBI?
☐ Yes

2A-53. Indicate and describe any existing ***pollution prevention*** (waste reduction) or ***best management practices*** for the chlorine *plant/cell room* that impact ***process wastewater*** generation or ***pollutant*** concentrations and were not covered in Questions 2A-46 through 2A-50.

☐ Not Applicable

Management Practice	Description of Practice

COMMENTS FOR SECTION 2A: CHLORINE

Cross reference your comments by question number and indicate the confidential status of your comment by checking (✓) the box in the column titled "CBI" (Confidential Business Information). If you need additional space, photocopy this page before writing on it, and number each copy in the space provided in the upper right corner.

Question Number	CBI?	Comment
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	

Section 2B. Chlorinated Hydrocarbons

Technical Information Helpline:

DO YOU MANUFACTURE ***CHLORINATED HYDROCARBONS*** AT THIS ***FACILITY***?

☐ Yes
☐ No *(Skip to Section 2C)*

For EACH chlorinated hydrocarbon plant listed in Question 1-7 as operating in 2006, complete a copy of the entire Section 2B. Number each copy of Section 2B in the space provided in the upper right-hand corner.

Questions 2B-1 through 2B-37 request information on the manufacturing processes at this plant.

Question 2B-38 requires you to list all sources of ***process wastewater*** at this plant.

Questions 2B-39 through 2B-48 request information on in-process ***pollution prevention***, ***pretreatmen***t, or modifications at this plant.

A comment page is included at the end of this section.

CBI? ☐ Yes

2B-1. Indicate the facility's name for this chlorinated hydrocarbon ***plant***.

CBI? ☐ Yes

2B-2. Which ***chlorinated hydrocarbons*** does this ***plant*** manufacture? Check (✓) ALL that apply.

☐ Chlorinated Paraffins
☐ Chlorobenzene (monochlorobenzene)
☐ 2-Chlorobutadiene (chloroprene)
☐ 1-Chlorobutane (butyl chloride)
☐ Chloroethane (ethyl chloride)
☐ 1-Chlorohexane (hexyl chloride)
☐ Chloromethane (methyl chloride)
☐ Chloromethyl Benzene (benzyl chloride)
☐ 1-Chloro-2-methylpropene (methyl allyl chloride)
☐ 1-Chloropropane (n-propyl chloride)
☐ 3-Chloro-1-propene (1,2-dichloropropylene)
☐ Chlorotoluene (o,m,p-chlorotoluene)
☐ 1,2-Dichlorobenzene (o-dichlorobenzene)
☐ 1,3-Dichlorobenzene (m-dichlorobenzene)
☐ 3,4-Dichloro-1-butene
☐ 1,4-Dichloro-2-butene
☐ 1,1-Dichloro-2-chloroethylene (trichloroethylene)
☐ 1,1-Dichloroethane (ethylidene chloride)
☐ 1,2-Dichloroethane (ethylene dichloride)
☐ 1,1-Dichloroethene (vinylidene chloride)
☐ 1,2-Dichloroethene (acetylene dichloride)
☐ Dichloromethane (methylene chloride)
☐ 1,1-Dichloropropane (propylidene chloride)

- ☐ 1,2-Dichloropropane (propylene dichloride)
- ☐ 1,3-Dichloropropane (trimethylene dichloride)
- ☐ 2,2-Dichloropropane (dimethyl-dichloromethane)
- ☐ 1,2-Dichloropropene (1,2-dichloropropylene)
- ☐ Hexachlorobenzene (amatin)
- ☐ Hexachlorobutadiene (perchlorobutadiene)
- ☐ Hexachlorocyclopentadiene (perchlorocyclopentadiene)
- ☐ 1,1,1,2,2,2-Hexachloroethane (hexachloroethane)
- ☐ Monochloroethylene (vinyl chloride)
- ☐ 1,2,3,4,5-Pentachlorobenzene (pentachlorobenzene)
- ☐ Pentachloroethane (ethane pentachloride)
- ☐ 1,2,3,4-Tetrachlorobenzene (tetrachlorobenzene)
- ☐ 1,1,1,2-Tetrachloroethane (chloromethyltrichloromethane)
- ☐ 1,1,2,2-Tetrachloroethane (acetylene tetrachloride)
- ☐ 1,1,2,2-Tetrachloroethylene (perchloroethylene)
- ☐ Trans-1,4-Dichloro-2-butene (trans-2-butylene dichloride)
- ☐ Trichlorobenzene
- ☐ 1,1,2-Trichloroethane (vinyl trichloride)
- ☐ Trichloromethane (chloroform)
- ☐ 1,2,3-Trichloropropane (allyl trichloride)
- ☐ 1,2,3-Trichloropropene (trichloropropene)
- ☐ Other *(specify)*: _____
- ☐ Other *(specify)*: _____
- ☐ Other *(specify)*: _____

CBI?
☐ Yes

2B-3. Please review the following example diagram (Example 2B-1). Attach a block diagram that shows the ***chlorinated hydrocarbon*** process(es) and the water use associated with this chlorinated hydrocarbon ***plant***. Specific instructions for the diagram are provided in the checklist below. The diagram should have a similar level of detail as EPA's Example 2B-1. You may use an existing diagram and mark the additional required information on the diagram by hand.

Provide as many diagrams as necessary to convey the information requested in the checklist below. Number each block diagram at the upper right corner; the first block diagram in Section 2B should be numbered 2B-1, the second 2B-2, etc. Also include the EPA-designated facility ID number (as shown on the cover page of Part A) in the upper right hand corner.

Provide the block diagram number(s) assigned to the chlorinated hydrocarbon diagram(s) on the line below. If the information for this chlorinated hydrocarbon plant was included on another diagram provided for this section, provide the block diagram number below.

Block Diagram(s) - _____

Block Diagram Checklist

Be sure to ...

☐ Write the block number, your EPA-designated facility ID number, and the plant name(s) on the diagram.

☐ Include all ***unit operations*** in the chlorinated hydrocarbon manufacturing process (e.g., ***unit operations*** for purification, ***recovery***, ***incineration***, and ***pollution prevention***).

☐ Include the raw materials used in the manufacture of the chlorinated hydrocarbons (e.g., chlorine, ethylene, HCl).

☐ Identify the chemicals manufactured (e.g., EDC, trichloroethane, perchloroethylene).

☐ Identify influent streams for the ***unit operations*** included on the chlorinated hydrocarbon plant diagram. Influent streams may include raw materials and catalysts. When sources are not shown on the diagram (i.e., the stream is entering from a location not shown on the diagram), describe the source (e.g., "from river") and add the block diagram number, when appropriate, where the stream's previous location can be seen.

☐ Identify effluent streams for the ***unit operations*** included on the chlorinated hydrocarbon diagram. Effluent streams may include ***process wastewater***, ***sludges***, and chemicals manufactured. When destinations are not shown on the diagram (i.e., the stream is exiting to a location not shown on the diagram), describe destination (e.g., "to wastewater treatment" or "to solid waste treatment") and add the block diagram number, when appropriate, where the stream's previous or next location can be seen.

☐ Include the average 2006 flow rates for the ***process wastewater*** and waste streams on the diagram (in gpm or gpd).

☐ Identify the final destination of the ***process wastewater*** and waste streams (e.g., wastewater effluent to ***wastewater treatment*** or ***POTW*** or ***surface waters***; solid and/or hazardous wastes to offsite ***landfills*** or ***incineration***).

☐ Include ***air pollution control*** systems (e.g., incinerators and wet gas scrubbers). Show and label the influent and effluent streams from the air pollution control system (e.g., vent gases from process into incinerator, wastewater from scrubber).

☐ Indicate ***recycle*** or reuse of ***process wastewater*** or other streams (e.g., reuse of HCl for pH control).

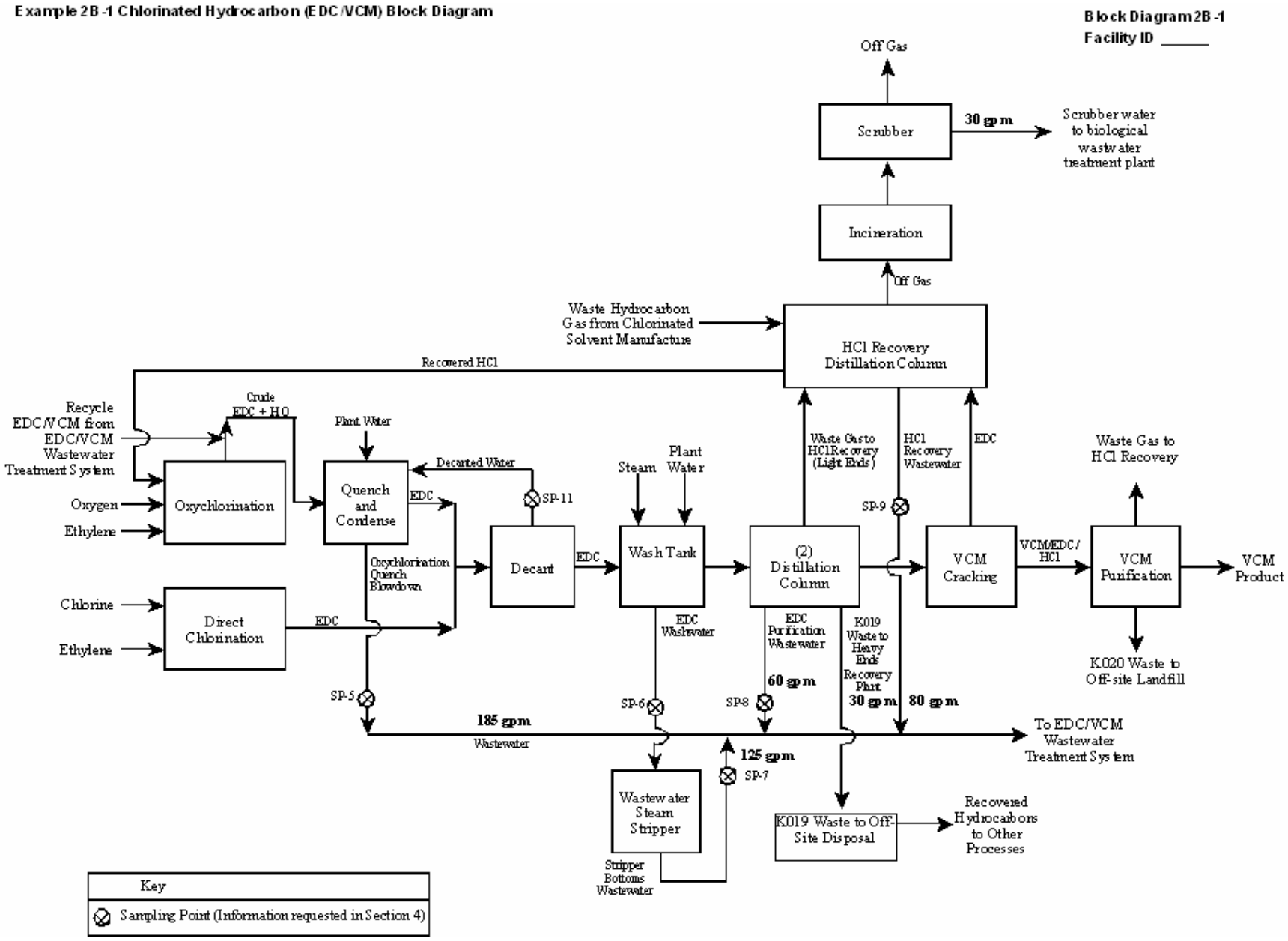
☐ Include any in-process ***wastewater treatment*** or ***pollution prevention*** technologies (e.g., process wastewater filters, stream strippers). Please review the definitions of wastewater treatment and pollution prevention to determine if a particular unit should be included. Show and label the influent and effluent streams from the ***treatment units***.

☐ Indicate the number of identical ***unit operations*** if greater than one. For example, you may use three identical incinerators. You can illustrate them as one box but denote "Incinerators (3)."

If you believe that the diagram should be treated as confidential, stamp it "Confidential" or write "Confidential" or "CBI" across the top. If any diagram is not marked "Confidential", it will be considered nonconfidential under 40 CFR Part 2, Subpart B.

Review:
If any of the statements above were not checked, please revise the block diagram(s) and ensure all statements have been checked.

Example 2B-1 Chlorinated Hydrocarbon (EDC/VCM) Block Diagram



CBI?
☐ Yes

2B-4. Provide the actual production for each ***chlorinated hydrocarbon*** chemical manufactured at this plant for the past five years (2002 – 2006) by production method. Production methods include direct chlorination, oxychlorination, hydrochlorination, and dehydrochlorination. For example, if you are manufacturing EDC by both direct chlorination and oxychlorination, complete two columns in the table below—one listing the direct chlorination production volumes and one listing the oxychlorination production volumes. Please make additional copies of this question if needed.

Year	**Chemical Name:** _____ **Production Method:** _____ **Actual Production (tons/year)**	**Chemical Name:** _____ **Production Method:** _____ **Actual Production (tons/year)**	**Chemical Name:** _____ **Production Method:** _____ **Actual Production (tons/year)**	**Chemical Name:** _____ **Production Method:** _____ **Actual Production (tons/year)**
2002				
2003				
2004				
2005				
2006				

The remainder of this section requests information on the chlorinated hydrocarbon plant in six parts: ***direct chlorination***, ***oxychlorination***, ***dehydrochlorination***, product purification, and hydrogen chloride ***recovery***.

Questions 2B-5 through 2B-11 request information on *direct chlorination*.

CBI? ☐ Yes **2B-5.** Do you use ***direct chlorination*** or ***hydrochlorination*** at this chlorinated hydrocarbon ***plant***?

☐ Yes
☐ No *(Skip to Question 2B-12)*

CBI? ☐ Yes **2B-6.** What ***CCH manufacturing segments*** chemicals is the ***direct chlorination*** at this ***plant*** intended to form?

_____ _____

_____ _____

CBI? ☐ Yes **2B-7.** Please indicate raw materials added in the ***direct chlorination*** process. Be sure to include any catalysts used. If necessary, attach an additional page.

Material Name	Components

CBI? ☐ Yes **2B-8.** How many ***reactors*** are used for ***direct chlorination***? _____

CBI? ☐ Yes **2B-9.** For each ***reactor*** or group of reactors, indicate the target or standard operating temperature and conditions in the reaction vessel.

Reactor Name/ID	Number of Reactors	Temperature Range (°F)	Reaction Phase (liquid or gas)	Reactor Type
				ex. Bubble column

CBI? ☐ Yes **2B-10.** How do you prevent catalyst loss from your reactor?

☐ Filter
☐ Cyclone
☐ Other *(specify)*: _____
☐ None

CBI? ☐ Yes **2B-11.** Is ***process wastewater*** generated in the direct chlorination process?

☐ Yes *(Please remember to list all **process wastewater** streams in Question 2B-38)*
☐ No

Questions 2B-12 through 2B-24 relate to *oxychlorination*.

CBI? ☐ Yes **2B-12.** Do you use ***oxychlorination*** at this chlorinated hydrocarbon ***plant***?

- ☐ Yes
- ☐ No *(Skip to Question 2B-25)*

CBI? ☐ Yes **2B-13.** What ***CCH manufacturing segments*** chemicals is the ***oxychlorination*** at this plant intended to form?

_____

_____

_____

_____

CBI? ☐ Yes **2B-14.** Please indicate raw materials used in ***oxychlorination***. Be sure to include any catalysts used. If necessary, attach an additional page.

Material Name	Components

CBI? ☐ Yes **2B-15.** Please indicate the source of HCl used in the ***oxychlorination*** reaction:

- ☐ Purchased
- ☐ Recycled from EDC purification
- ☐ Recycled from VCM cracking
- ☐ Other *(specify)*: _____

CBI? ☐ Yes **2B-16.** How many ***reactors*** are used for ***oxychlorination***? _____

Section Copy ____ of ____

CBI?
☐ Yes

2B-17. For each ***reactor*** or group of reactors, indicate the target or standard operating temperature and conditions in the reaction vessel.

Reactor Name/ID	Number of Reactors	Temperature Range (°F)	Reactor Type	Oxygen Source
			☐ Fixed bed ☐ Fluidized bed	☐ Pure O_2 ☐ Air ☐ O_2-enriched air
			☐ Fixed bed ☐ Fluidized bed	☐ Pure O_2 ☐ Air ☐ O_2-enriched air
			☐ Fixed bed ☐ Fluidized bed	☐ Pure O_2 ☐ Air ☐ O_2-enriched air
			☐ Fixed bed ☐ Fluidized bed	☐ Pure O_2 ☐ Air ☐ O_2-enriched air
			☐ Fixed bed ☐ Fluidized bed	☐ Pure O_2 ☐ Air ☐ O_2-enriched air

CBI?
☐ Yes

2B-18. How do you prevent catalyst loss from your ***reactor***?

☐ Filter
☐ Cyclone
☐ Other *(specify)*: ________________________________
☐ None

CBI?
☐ Yes

2B-19. Do you cool the ***crude chlorinated hydrocarbon*** from the ***oxychlorination*** reactor?

☐ Yes
☐ No *(Skip to Question 2B-24)*

CBI?
☐ Yes

2B-20. How is the ***chlorinated hydrocarbon*** cooled?

☐ Contact ***quench***
☐ Non-contact heat exchanger
☐ Other *(specify)*: ________________________________

CBI?
☐ Yes

2B-21. Is the cooling water recirculated or applied once-through?

☐ Recirculated
☐ Applied once-through *(Skip to Question 2B-24)*

CBI? ☐ Yes

2B-22. Is any treatment and/or conditioning (e.g., chemical addition) performed in the recirculating loop?

- ☐ Yes
- ☐ No *(Skip to Question 2B-24)*

CBI? ☐ Yes

2B-23. What type of treatment is performed in the recirculating loop?

- ☐ Sand filtration
- ☐ Multimedia filtration
- ☐ Chemical addition *(specify chemicals):* _____
- ☐ Other *(specify)*: _____
- ☐ Other *(specify)*: _____

CBI? ☐ Yes

2B-24. Is ***process wastewater*** generated in the oxychlorination process?

- ☐ Yes *(Please remember to list all **process wastewater** streams in Question 2B-38)*
- ☐ No

Questions 2B-26 through 2B-30 relate to *dehydrochlorination*.

CBI? ☐ Yes **2B-25.** Do you use ***dehydrochlorination*** at this chlorinated hydrocarbon ***plant***?

- ☐ Yes
  - ☐ Thermal (cracking)
  - ☐ Caustic
- ☐ No *(Skip to Question 2B-31)*

CBI? ☐ Yes **2B-26.** What ***CCH manufacturing segments*** chemicals is the ***dehydrochlorination*** at this ***plant*** intended to form?

_____

_____

_____

_____

CBI? ☐ Yes **2B-27.** Please indicate raw materials used in the ***dehydrochlorination*** process. Be sure to include any catalysts used. If necessary, attach an additional page.

Material Name	Components

CBI? ☐ Yes **2B-28.** How many ***reactors*** are used for ***dehydrochlorination***? _____

CBI? ☐ Yes **2B-29.** For each ***reactor*** or group of reactors, indicate the target or standard operating temperature and conditions in the reaction vessel.

Reactor Name/ID	Number of Reactors	Temperature Range (°F)	Reaction Phase (liquid or gas)	Reactor Type
				ex. Furnace

CBI? ☐ Yes **2B-30.** Is ***process wastewater*** generated in the dehydrochlorination process?

- ☐ Yes *(Please remember to list all **process wastewater** streams in Question 2B-38)*
- ☐ No

Questions 2B-31 to 2B-33 relate to product *purification*.

CBI?
☐ Yes

2B-31. Does this plant purify the crude ***chlorinated hydrocarbon*** product?

☐ Yes
☐ No *(Skip to Question 2B-34)*

CBI?
☐ Yes

2B-32. Complete the following table indicating which ***unit operations*** you operate for the purpose of product purification.

- Provide the name of the unit (e.g., quench column, acid wash, caustic wash, neutral wash, light ends column, heavy ends column).
- Indicate the number of units.
- Provide the name of the unit operations feeding the unit. Use the reactors IDs provided in questions 2B-9, 2B-17, and 2B-29 if applicable.
- Describe the purpose of the unit.
- Indicate the destination of any ***process wastewater*** or other waste streams leaving the unit. For example, wash tank wastewater may go to wastewater treatment; heavy ends may go to off-site disposal or recovery. Please be sure to include any process wastewater sources in Question 2B-38.

Example:

Unit Name	Number of Units	Unit Operations Feeding Unit	Purpose	Destination of Process Wastewater or Other Waste Streams
Wash tank (acid)	2	DC Reactor 1&2 Oxy Reactor 1&2	Wash EDC product stream	Process wastewater to wastewater stripper
Wash tank (caustic)	2	Product stream from acid wash.	Neutralize stream after acid wash	Process wastewater to wastewater stripper
Light ends column	1	Product stream from caustic wash	Separate EDC product stream	Light ends to vent incinerator Bottoms to heavy ends
Heavy ends column	1	Light ends bottoms	Separate EDC product stream	K019 waste to offisite disposal

Unit Name	Number of Units	Unit Operations Feeding Unit	Purpose	Destination of Process Wastewater or Other Waste Streams

CBI?
☐ Yes

2B-33. Is ***process wastewater*** generated in the chlorinated hydrocarbon purification process?

☐ Yes *(Please remember to list all **process wastewater** streams in Question 2B-38)*
☐ No

Questions 2B-34 through 2B-37 relate to *recovery* of hydrogen chloride (HCl).

CBI? ☐ Yes

2B-34. Are any ***process wastewater*** streams at this plant sent to HCl ***recovery***?

☐ Yes
☐ No

If no, describe how waste HCl is handled. *(Then skip to Question 2B-38)*

_____

CBI? ☐ Yes

2B-35. What type(s) of HCl recovery system is used? Check (✓) ALL that apply.

☐ Catoxid® reactor
☐ Distillation column
☐ Other *(specify)*: _____

CBI? ☐ Yes

2B-36. Which streams are sent to HCl recovery? You can use the unit names from Question 2B-32 if applicable.

Unit Name/Stream Name Feeding HCl Recovery	Description of Stream (vents, heavy ends, etc.)	HCl Recovery System (identified in Question 2A-35)

CBI? ☐ Yes

2B-37. Is ***process wastewater*** generated in the HCl recovery process?

☐ Yes *(Please remember to list all **process wastewater** streams in Question 2B-38)*
☐ No

CBI?
☐ Yes

2B-38. For each ***process wastewater*** stream related to ***chlorinated hydrocarbon*** production at this ***plant***, complete a row in the table on the following page. At the top of each table, specify the associated plant name (from Question 1-7). Include the following in the table:

- Name of each process wastewater stream.
- Corresponding block diagram where the process wastewater source is depicted.
- Average daily flow rate and operating days per year.
- Process wastewater destination code and associated details from the table below.

If you need additional rows, copy the table as necessary. Make sure all process wastewater streams on block diagram and noted in Questions 2B-11, 24, and 30 are listed on the table.

Process wastewater streams for chlorinated hydrocarbon plants may include but are not limited to:

- Product wash water (acid, caustic, neutral).
- ***Quench*** water.
- HCl recovery wastewater.
- Incinerator ***wet air pollution control*** water.
- Contact cooling water.
- Equipment cleaning and maintenance water.
- Contact stormwater.

For the purpose of this questionnaire, process wastewater does not includes non-routine streams such as water from safety showers, water dripping from a hose during a disconnect, or water from fire-fighting or other emergency systems.

Destination Codes

Destination Description	Code	Process Wastewater Destination Details
Sent to In-process ***treatment unit*** (i.e. ***pollution prevention*** or ***pretreatment*** technologies).	IP	Provide name of treatment unit (from block diagram)
Wastewater treatment system	WWT	Provide name of wastewater treatment system
Discharge without treatment by pipeline, sewer, or other conveyance to ***surface water***	SW	Provide name of outfall
Discharge to ***POTW***, no treatment:	POTWRAW	Provide name of POTW
Discharge to ***PrOTW***, no treatment:	PrOTWRAW	Provide name of PrOTW
Zero discharge or alternative ***disposal*** method	ZEROALT	Describe method (attach additional pages as necessary)
Recycle to process	RECYC	Describe where in the process the stream is recycled
Reused in cooling towers	COOLW	
Deep-well ***injection***	DWELL	
Evaporation	EVAP	
Contract hauled	CHAUL	Provide disposal rate, including transportation, and provide destination/ disposal method
Other	OTHER	Describe (attach additional pages as necessary)

Question 2B-38, continued

Process Wastewater Flows and Destination Table

Plant Name (from Question 1-7): _____

Name of Process Wastewater Stream	Block Diagram ID	Average Flow Rate	Destination Code (See Destination Codes Table)	Associated Destination Information (See Destination Codes Table)
Examples:				
Wash Tank 1	*2B-1*	*5,000 gpd, 350 dpy*	*IP*	*Steam Stripper*
Wash Tank 2	*2B-1*	*5,000 gpd, 350 dpy*	*IP*	*Steam Stripper*
Contact Cooling Water	*2B-1*	*5,000 gpd, 350 dpy*	*WWT*	*EDC/VCM Wastewater Treatment*
Incinerator Scrubber	*2B-1*	*2,000 gpd, 350 dpy*	*WWT*	*EDC/VCM Wastewater Treatment*

Name of Process Wastewater Stream	Block Diagram ID	Average Flow Rate	Destination Code (See Destination Codes Table)	Associated Destination Information (See Destination Codes Table)
		_____ *gpd,* _____ *dpy*		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		

CBI? ☐ Yes

2B-39. List any waste streams from Question 2B-38 that are known by the ***facility*** to be sources of ***dioxins***.

Ex: Incinerator scrubber wastewater, Oxychlorination reaction.

CBI? ☐ Yes

2B-40. Did you indicate in Question 2B-38 that this plant has in-process ***pollution prevention*** or ***pretreatment*** technologies (Destination Code IP)?

☐ Yes
☐ No *(Skip to Question 2B-45)*

CBI? ☐ Yes

2B-41. In the table below, check the in-process unit operations used for ***pollution prevention*** or ***pretreatment*** in this ***plant***/cell room. Provide the following additional information in the table:

- Indicate the number of units.
- Indicate whether the unit's intended purpose is for dioxin removal. If the unit is intended for dioxin removal, please provide any sampling data, including any data used to design the unit, in Section 4.
- If the treatment unit is not intended for dioxin removal, describe the purpose of the unit.

For each unit checked, please complete the detailed questions in 2B-42, 2B-43, or 2B-44.

	Unit Operation	Number of Operating Units	Is Unit Intended to Remove Dioxin?	Treatment Purpose	If this Operation is Performed, Complete the Following Question
☐	Filtration – Activated Carbon		☐ Yes ☐ No		2B-42
☐	Filtration – Membrane		☐ Yes ☐ No		2B-42
☐	Filtration – Multimedia		☐ Yes ☐ No		2B-42
☐	Filtration – Sand		☐ Yes ☐ No		2B-42
☐	Filtration – Other		☐ Yes ☐ No		2B-42
☐	Steam Stripper		☐ Yes ☐ No		2B-43
☐	Other		☐ Yes ☐ No		2B-44

For each unit checked in Question 2B-41, please complete the applicable questions from 2B-42 through 2B-44 for each operating unit. You may need to make additional copies of these questions for multiple technologies. Note that these technologies should be included on the block diagram(s) provided in Question 2B-3. Number each copy of this question in the upper right-hand corner.

CBI?
☐ Yes

2B-42. For each in-process filter used for ***pollution prevention*** or ***pretreatment*** in this ***plant***, please complete one copy of the following question.

FILTRATION: MEMBRANE, MULTI-MEDIA, SAND, OR ACTIVATED CARBON

a. Provide the treatment unit name from the block diagram..... _____

b. Provide the year of installation of the unit..... _____

c. Provide the process wastewater streams from Question 2A-38 that enter this unit ..... _____ _____ _____
_____ _____ _____

d. Provide the name(s) and flow rates of any additional streams that enter this unit including any non-CCH streams. Check the box if there are no other influent streams.
☐ No additional influent streams
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm

e. Provide the destination of the treated process wastewater.....
☐ ***End-of-Pipe Wastewater Treatment System*** *(provide name)*: _____
☐ ***Discharge*** to ***surface water***
☐ Discharge to ***POTW*** or ***PrOTW***
☐ ***Zero discharge*** or alternative ***disposal*** method
☐ ***Recycle*** to process
☐ Other *(specify)*: _____

f. Indicate the mode of operation for the unit .....
☐ ***Batch***
☐ Continuous

g. Provide the average daily flow rate for the unit in 2006 ..... _____ gal/min

h. Provide the typical daily unit operating hours per day and days per year for 2006..... _____ hrs/day **AND**
_____ days/yr

i. Provide the ***design capacity flow rate*** for the unit ..... _____ gal/min

j. Provide the unit's annual energy requirement and an indication of the type of data..... _____ kWh
☐ Manufacturer's Specification
☐ 2006 Energy Use

k. What type of filtration is performed in this unit. Check (✓) ALL that apply.....
☐ Membrane
☐ Multi-media
☐ Sand
☐ Activated Carbon
☐ Other *(specify):* _____

l. Provide the unit's operating pressure ..... _____ psi

FILTRATION: MEMBRANE, MULTI-MEDIA, SAND, OR ACTIVATED CARBON

m. Provide the filter cross-sectional flow rate ..... _____ gal/ft^2

n. Provide the volume of backwash water ..... _____ gal/day

_____ dpy

o. Indicate in the table below what chemicals, if any, are added to the filtration unit:

Chemical Name	Purpose	Addition Rate
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day

p. How is the spent media handled?..... ☐ Sent to the manufacturer for regeneration
☐ Regenerated on site
☐ Destination of regeneration wastewater _____
☐ No regeneration ***wastewater*** generated
☐ Sent to an offsite or onsite landfill
☐ Other *(specify)*: _____

q. How often is spent media removed, replaced, or regenerated?..... _____ times per year

r. How much spent media is removed, replaced, or regenerated?..... _____ tons per year

_____ gallons per year

CBI?
☐ Yes

2B-43. For each in-process steam stripper used for ***pollution prevention*** or ***pretreatment*** in this ***plant***, please complete one copy of the following question.

STEAM STRIPPER

a. Provide the treatment unit name from the block diagram..... _____

b. Provide the year of installation of the unit..... _____

c. Provide the process wastewater streams from Question 2A-38 that enter this unit ..... _____ _____ _____
_____ _____ _____

d. Provide the name(s) and flow rates of any additional streams that enter this unit including any non-CCH streams. Check the box if there are no other influent streams.
☐ No additional influent streams
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm

e. Provide the destination of the treated process wastewater .....
☐ ***End-of-Pipe Wastewater Treatment System*** *(provide name)*: _____
☐ ***Discharge*** to ***surface water***
☐ Discharge to ***POTW*** or ***PrOTW***
☐ ***Zero discharge*** or alternative ***disposal*** method
☐ ***Recycle*** to process
☐ Other *(specify)*: _____

f. Provide the ***design capacity flow rate*** for the unit ..... _____ gal/min

g. Provide the average daily flow rate for the unit for 2006..... _____ gal/min

h. Provide the typical daily unit operating hours per day and days per year for 2006..... _____ hrs/day **AND**
_____ days/yr

i. Provide the unit's annual energy requirement and an indication of the type of data..... _____ kWh
☐ Manufacturer's Specification
☐ 2006 Energy Use

j. Provide the percent of bottom stream that was ***recycled*** back to stripper feed in calendar year 2006 ..... _____ %

k. How are recovered organics handled? (Check (✓) all that apply) .....
☐ ***Recycled*** to process *(specify which)*: _____
☐ Used for onsite auxiliary fuel
☐ Sold
☐ ***Incinerated***
☐ Other *(specify):* _____

STEAM STRIPPER

l. Provide the following design and operating parameters:

Parameter	Design Value	Operating Range
Feed temperature	°F	°F
Bottoms temperature	°F	°F
Overhead temperature	°F	°F
Column operating pressure	psig	psig
Reflux ratio	%	%
Steam requirement	lb/hr	lb/hr
Steam temperature	°F	°F
Steam pressure	psig	psig
Annual energy requirement	kWh	kWh

m. Indicate column type ..... ☐ Packed
- ☐ Pall rings
- ☐ Rashing rings
- ☐ Berl saddles
- ☐ Intalox saddles
- ☐ Other *(specify)*: _____

☐ Tray
- ☐ Perforated sieve
- ☐ Bubble cap
- ☐ Valve
- ☐ Other *(specify)*: _____

☐ Number of trays *(specify)*: _____

n. Indicate in the table below what chemicals, if any, are added to the column:

Chemical Name	Purpose	Addition Rate
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day

CBI?
☐ Yes

2B-44. For any other processes for ***pollution prevention*** or ***pretreatment*** in this ***plant***, please complete one copy of the following question.

OTHER _____

a. Provide the treatment unit name from the block diagram..... _____

b. Provide the year of installation of the unit..... _____

c. Provide the process wastewater streams from Question 2A-38 that enter this unit ..... _____ _____ _____

_____ _____ _____

d. Provide the name(s) and flow rates of any additional streams that enter this unit including any non-CCH streams. Check the box if there are no other influent streams.

☐ No additional influent streams
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm

e. Provide the destination of the treated process wastewater .....

☐ ***End-of-Pipe Wastewater Treatment System*** *(provide name)*: _____
☐ ***Discharge*** to ***surface water***
☐ Discharge to ***POTW*** or ***PrOTW***
☐ ***Zero discharge*** or alternative ***disposal*** method
☐ ***Recycle*** to process
☐ Other *(specify)*: _____

f. Indicate the mode of operation for the unit .....

☐ ***Batch***
☐ Continuous

g. Provide the typical daily unit operating hours per day and days per year for 2006.....

_____ hrs/day **AND**
_____ days/yr

h. Provide the unit's annual energy requirement and an indication of the type of data.....

_____ kWh

☐ Manufacturer's Specification
☐ 2006 Energy Use

i. Provide the unit capacity..... _____ gal

j. Provide the ***design capacity flow rate*** for the unit ..... _____ gal/min

k. Provide the average daily flow rate for the unit.. _____ gal/min

l. What is the target temperature for this unit?..... _____ ° Fahrenheit

m. What is the target pH for this unit? ..... _____

n. What is the purpose of this unit? ..... _____

o. Describe the mechanism of treatment..... _____

OTHER _____

p. Indicate in the table below what chemicals, if any, are added to the column:

Chemical Name	Purpose	Addition Rate
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day

q. Is ***sludge*** collected directly from this unit? ..... ☐ Yes ☐ No

r. Does the unit have continuous sludge removal? ..... ☐ Yes *(Skip to Question t)* ☐ No

s. How often is sludge removed?..... _____ times per year

t. How much sludge was collected in 2006?..... _____ pounds

u. What is the percent solids of the sludge?..... _____ % solids

v. Is the sludge hazardous under RCRA? ..... ☐ Yes ☐ No

CBI?
☐ Yes

2B-45. Provide information on any modifications to this plant to improve treatment system performance or reduce the generation of pollutants. Also include projects currently under construction or projects for which capital has been allocated. This may include the replacement, upgrade, or addition of one or more ***unit operations*** or ***treatment units***. For purposes of this question, do not include in-kind replacement of ancillary equipment as a modification. For each modification, provide the following:

- A description of the modification.
- A list of the streams affected by the modification.
- The destination of the affected streams.
- An indication of whether the unit's intended purpose is for dioxin removal. If the unit is intended for dioxin removal, please provide any sampling data, including any data used to design the unit, in Section 4.
- If the modification is not intended for dioxin removal or has multiple purposes, describe the additional reasons for the modification (e.g., compliance with water quality limits).
- The date the project started.
- The date the project was completed.
- The length of time the chlorine ***plant*** was shutdown to implement the modification. If no shutdown or outage was necessary for the modification, write "0" or "zero" for the length of shutdown.

Description of Modification	Streams Affected	Destination of Affected Streams	Is Modification Intended to Reduce Dioxin?	Additional Reasons for Modification	Date Project Started	Date Project Completed	Length of Shutdown (days)
			☐ Yes ☐ No				
			☐ Yes ☐ No				
			☐ Yes ☐ No				
			☐ Yes ☐ No				
			☐ Yes ☐ No				

CBI?
☐ Yes

2B-46. Provide cost data for in-process ***unit operations*** or modifications identified in Questions 2B-42 through 2B-45 that were installed between 1992 - 2006. You are required to provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates on the comments page at the end of this section. For all costs, do not adjust for inflation.

You may need to make additional copies of this question if multiple modifications are listed. You should complete one copy of this question for each copy of Questions 2B-42 through 2B-44 and each row in Question 2B-45. Number each copy of this question in the upper right-hand corner.

a. For each treatment unit or modification, identify the project and provide cost information in the table below.

Project: _____

Type of Cost	Project	Cost	Year Cost Incurred
Direct	Purchased equipment (includes all equipment for the installation of the upgrade: mechanical equipment; electrical equipment; spare parts; freight charges; taxes; insurance; and duties)	$	
	Purchased equipment installation (includes installation of all equipment; electrical equipment; mechanical equipment; structural supports, insulation, and paint)	$	
	Instrumentation and control (includes purchase, installation, and calibration)	$	
	Piping (includes cost of pipe, pipe hangers, fittings, valves, insulation)	$	
	Buildings (buildings constructed to house treatment units, operator rooms, or other operations associated with the system; also includes plumbing, heating, ventilation, dust collection, air conditioning, lighting, telephones, intercoms, painting, sprinklers, fire alarms)	$	
	Site preparation (includes site clearing except major demolition, grading, roads, walking areas, fences)	$	
	Major site demolition (other than site preparation, see above)	$	
	Land (includes property costs and survey fees)	$	
Total Direct Costs		$	
Indirect	Engineering costs (includes process design and general engineering, drafting, cost engineering, consulting fees, supervision, inspection)	$	
	Construction expenses (includes temporary construction offices, roads, communications, fencing; construction tools and equipment; permits, taxes, insurance)	$	
	Contractor's fees	$	
	Contingency actually expended (to compensate for unpredictable events such as storms, floods, strikes, price changes, errors in estimates, design changes, etc.)	$	
Total Indirect Costs		$	
Total Capital Cost		$	

b. In the table below, itemize the purchased equipment and installation costs provided in Part (a) for each major piece of equipment. If the total costs for purchased equipment and installation in Question 2B-46(a) and (b) differ by a factor of 10% or more, use the comments page at the end of this section to explain the difference.

Project: _____

Major Piece of Equipment	Purchased Equipment Cost	Installation Cost	Year Cost Incurred
Ex. Wastewater Steam Stripper	*$ 3,000*	*$ 250*	*2001*
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
SUBTOTAL of Major Equipment Cost	$	$	

CBI?
☐ Yes

2B-47. Provide annual operation and maintenance (O&M) cost data for in-process ***unit operations*** or modifications identified in Questions 2B-42 through 2B-45 that were installed between 1992 - 2006. For each project, complete the table below for the O&M costs incurred during the most current year of operation. You are required to provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates on the comments page at the end of this section. For all costs, do not adjust for inflation. If the first full year of operation is atypical or not representative of operation of this project, use the comments page at the end of this section to explain.

You may need to make additional copies of this question if multiple projects are listed. You should complete one copy of this question for each copy of Questions 2A-42 through 2A-44 and each row in Question 2B-45. Number each copy of this question in the upper right-hand corner.

Project: _____

Most current full year of operation (year): _____

Type of Cost	O&M Cost Category	Cost
Operation and Maintenance	Operating labor	$
	Maintenance labor	$
	Maintenance materials	$
	Chemicals	$
	Energy: gas	$
	Energy: electric	$
	Energy: oil	$
	Energy: other *(specify)*	$
	Hazardous Sludge Disposal	$
	Nonhazardous Sludge Disposal	$
	Other *(specify)*	$
	Other *(specify)*	$
	Other *(specify)*	$
	Other *(specify)*	$
Total Operation and Maintenance Cost		**$**

CBI?
☐ Yes

2B-48. Indicate and describe existing and describe any existing ***pollution prevention*** (waste reduction) or ***best management practices*** for the chlorinated hydrocarbon plant that impact ***process wastewater*** generation or ***pollutant*** concentrations and were not covered in Questions 2B-41 through 2B-45.

☐ Not Applicable

Management Practice	Description of Practice

COMMENTS FOR SECTION 2B: CHLORINATED HYDROCARBON MANUFACTURING

Cross reference your comments by question number and indicate the confidential status of your comment by checking (✓) the box in the column titled "CBI" (Confidential Business Information). If you need additional space, photocopy this page before writing on it, and number each copy in the space provided in the upper right corner.

Question Number	CBI?	Comment
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	

Section 2C. – PVC Manufacture

Technical Information Helpline:

DO YOU MANUFACTURE ***PVC*** AT THIS ***FACILITY***?

☐ Yes
☐ No *(Skip to Section 3)*

For EACH PVC plant listed in Question 1-7 as operating in 2006, complete a copy of the entire Section 2C. Number each copy of Section 2C in the space provided in the upper right-hand corner.

Questions 2C-1 through 2C-11 request information on the manufacturing processes at this plant.

Question 2C-12 requires you to list all sources of ***process wastewater*** at this plant.

Questions 2C-13 through 2C-22 request information on in-process ***pollution prevention***, ***pretreatmen***t, or modifications at this plant.

A comment page is included at the end of this section.

CBI? ☐ Yes

2C-1. Indicate the facility's name for this PVC ***plant***.

_____

CBI? ☐ Yes

2C-2. Please review the following example block diagram (Example 2C-1). Attach a block diagram that shows the PVC process(es) and the water use associated with this PVC plant. Specific instructions for the diagram are provided in the checklist below. The diagram should have a similar level of detail as EPA's Example 2C-1. You may use an existing diagram and mark the additional required information on the diagram by hand.

Provide as many diagrams as necessary to convey the information requested in the checklist below. Number each block diagram at the upper right corner; the first block diagram in Section 2C should be numbered 2C-1, the second 2C-2, etc. Also include the EPA-designated facility ID number (as shown on the cover page of Part A) in the upper right hand corner.

Provide the block diagram number(s) assigned to the PVC diagram(s) on the line below.

Block Diagram(s) - _____

Section Copy ____ of ____

Block Diagram Checklist

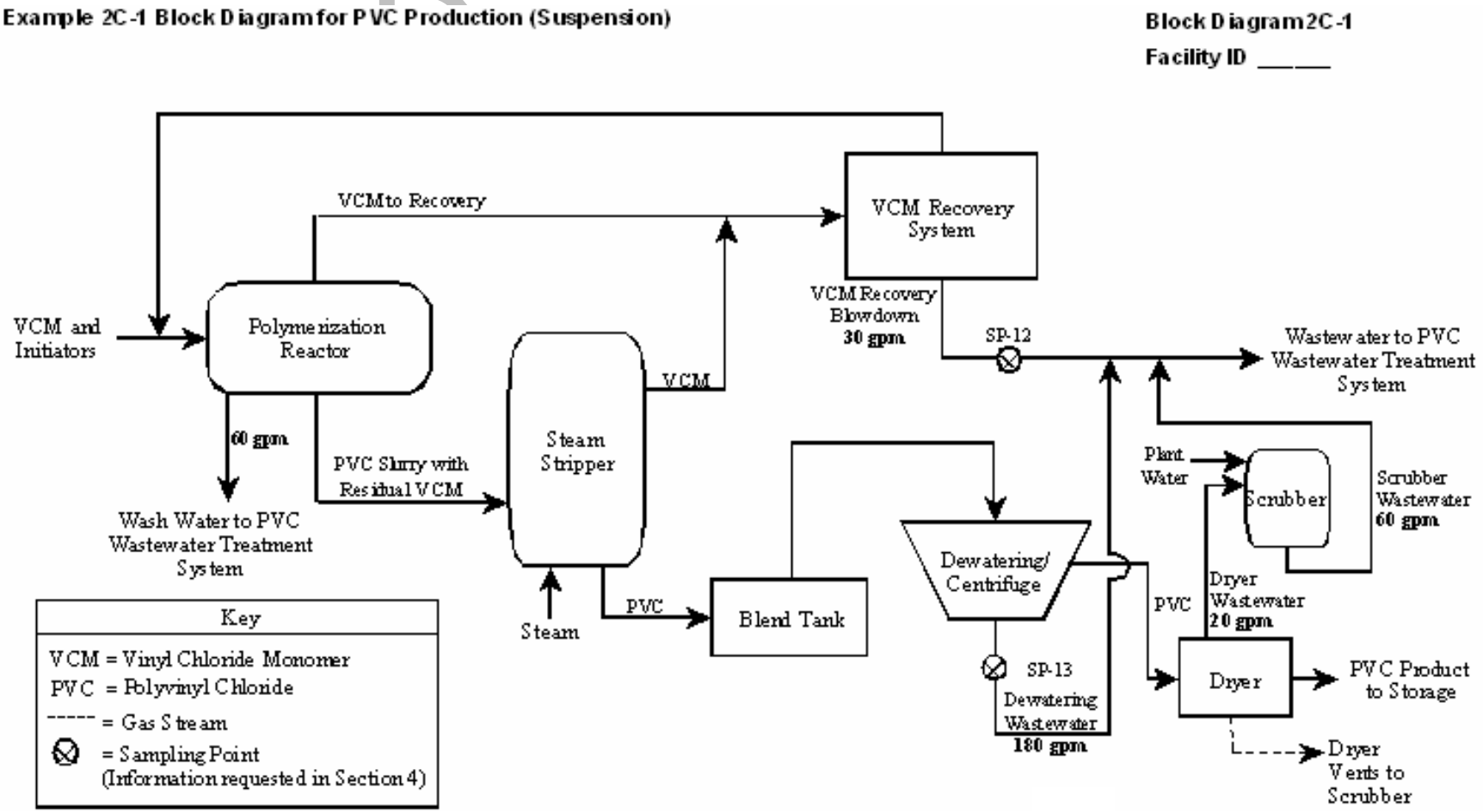
Be sure to...

- ☐ Write the block diagram number, your EPA-designated facility ID number, and the plant name(s) on the diagram.
- ☐ Include all ***unit operations*** in the PVC manufacturing process (e.g., polymerization, steam stripping, dewatering, PVC drying, and VCM ***recovery***).
- ☐ Include the raw materials used in the manufacture of PVC (e.g., VCM).
- ☐ Identify the chemicals manufactured (e.g., PVC).
- ☐ Identify influent streams for the ***unit operations*** included on the PVC plant diagram. Influent streams may include raw materials and catalysts. When sources are not shown on the diagram (i.e., the stream is entering from a location not shown on the diagram), describe the source (e.g., "from river") and add the block diagram number, when appropriate, where the stream's previous location can be seen.
- ☐ Identify effluent streams for the ***unit operations*** included on the PVC plant diagram. Effluent streams may include ***process wastewater***, ***sludges***, and chemicals manufactured. When destinations are not shown on the diagram (i.e., the stream is exiting to a location not shown on the diagram), describe destination (e.g., "to wastewater treatment" or “to solid waste treatment”) and add the block diagram number, when appropriate, where the stream's previous or next location can be seen.
- ☐ Include the average 2006 flow rates for the ***process wastewater*** and waste streams on the diagram (in gpm or gpd).
- ☐ Identify the final destination of the ***process wastewater*** and waste streams (e.g., wastewater effluent to ***wastewater treatment*** or ***POTW*** or ***surface waters***; solid and/or hazardous wastes to offsite ***landfills*** or ***incineration***).
- ☐ Include ***air pollution control*** systems (e.g., incinerators and wet gas scrubbers). Show and label the influent and effluent streams from the air pollution control system (e.g., vent gases from process into incinerator, wastewater from scrubber).
- ☐ Indicate ***recycle*** or reuse of ***process wastewater*** or other streams (e.g., reuse of recovered VCM).
- ☐ Include any in-process ***wastewater treatment*** or ***pollution prevention*** technologies (e.g., process wastewater filters, stream strippers). Please review the definitions of wastewater treatment and pollution prevention to determine if a particular unit should be included. Show and label the influent and effluent streams from the ***treatment units***.
- ☐ Indicate the number of identical ***unit operations*** if greater than one. For example, you may use three identical incinerators. You can illustrate them as one box but denote “Incinerators (3).”

If you believe that the diagram should be treated as confidential, stamp it "Confidential" or write "Confidential" or "CBI" across the top. If any diagram is not marked "Confidential", it will be considered nonconfidential under 40 CFR Part 2, Subpart B.

Review:
If any of the statements above were not checked, please revise the block diagram(s) and ensure all statements have been checked.

Example 2C-1 Block Diagram for PVC Production (Suspension)



CBI? ☐ Yes

2C-3. Provide the total PVC resin production for the past five years (2002-2006).

Year	Actual Production (tons per year)	Production Capacity (tons per year)	Operating Schedule	
			Typical Hours/Day	Days/Year
2002				
2003				
2004				
2005				
2006				

CBI? ☐ Yes

2C-4. Please indicate raw materials added in the PVC polymerization process. Be sure to include any catalysts used.

Material Name	Components

CBI? ☐ Yes

2C-5. How many ***reactors*** are used for PVC production? _____

CBI? ☐ Yes

2C-6. For each ***reactor*** or group of reactors, indicate the target reaction temperature or standard operating temperature in the reaction vessel.

Reactor Name	Number of Reactors	Temperature Range (°F)

CBI? ☐ Yes

2C-7. Do you use steam stripping to remove residual VCM from the PVC slurry?

☐ Yes
☐ No

CBI? ☐ Yes

2C-8. Do you have a VCM ***recovery*** system?

☐ Yes
☐ No *(Skip to Question 2C-10)*

CBI? ☐ Yes **2C-9.** What streams are sent to VCM ***recovery***?

- ☐ Steam stripper
- ☐ Head gases from polymerization reactor
- ☐ Other *(specify):* _____

CBI? ☐ Yes **2C-10.** How do you dewater your PVC slurry product prior to drying?

- ☐ Centrifuge
- ☐ Other *(specify)*: _____

CBI? ☐ Yes **2C-11.** How do you dry your PVC?

- ☐ Rotary dryer
- ☐ Fluid bed dryer
- ☐ Spray dryer
- ☐ Other *(specify)*: _____

CBI?
☐ Yes

2C-12. For each ***process wastewater*** stream related to PVC manufacture at this plant, complete a row in the table on the following page. At the top of each table, specify the associated ***plant*** name (from Question 1-7). Include the following in the table:

- Name of each process wastewater stream.
- Corresponding block diagram where the process wastewater source is depicted.
- Average daily flow rate and operating days per year.
- Process wastewater destination code and associated details from the table below.

If you need additional rows, copy the table as necessary. Make sure all process wastewater streams listed on the block diagram are listed on the table.

Process wastewater sources may include, but are not limited to:

- Reactor wash water.
- PVC dewatering wastewater.
- VCM recovery wastewater
- Dryer vents ***wet air pollution control***.
- Incinerator ***wet air pollution control***.

For the purpose of this questionnaire, process wastewater does not includes non-routine streams such as water from safety showers, water dripping from a hose during a disconnect, or water from fire-fighting or other emergency systems.

Destination Codes

Destination Description	Code	Process Wastewater Destination Details
Sent to In-process ***treatment unit*** (i.e. ***pollution prevention*** or ***pretreatment*** technologies).	IP	Provide name of treatment unit (from block diagram)
Wastewater treatment system	WWT	Provide name of wastewater treatment system
Discharge without treatment by pipeline, sewer, or other conveyance to ***surface water***	SW	Provide name of Outfall
Discharge to ***POTW***, no treatment:	POTWRAW	Provide name of POTW
Discharge to ***PrOTW***, no treatment:	PrOTWRAW	Provide name of PrOTW
Zero discharge or alternative ***disposal*** method	ZEROALT	Describe method (attach additional pages as necessary)
Recycle to process	RECYC	Describe where in the process the stream is recycled
Reuse in cooling towers	COOLW	
Deep-well ***injection***	DWELL	
Evaporation	EVAP	
Contract hauled	CHAUL	Provide disposal rate, including transportation, and provide destination/disposal method
Other	OTHER	Describe (attach additional pages as necessary)

Section Copy ____ of ____

Question Copy ____ of ____

Question 2C-12, continued

Process Wastewater Flows and Destination Table

Plant Name (from Question 1-7): ________________________________

Name of Process Wastewater Stream	Block Diagram ID	Average Flow Rate	Destination Code	Associated Destination Information
			(See Destination Codes Table)	
Examples:				
PVC Reactor Washing	*2C-1*	*86,400 gpd, 350 dpy*	*WWT*	*PVC Wastewater Treatment*
VCM Recovery	*2C-1*	*43,200 gpd, 350 dpy*	*WWT*	*PVC Wastewater Treatment*
PVC Dewatering	*2C-1*	*259,200 gpd, 350 dpy*	*WWT*	*PVC Wastewater Treatment*
PVC Drying	*2C-1*	*28,800 gpd, 350 dpy*	*WWT*	*PVC Wastewater Treatment*
Scrubber	*2C-1*	*86,400 gpd, 350 dpy*	*WWT*	*PVC Wastewater Treatment*

Name of Process Wastewater Stream	Block Diagram ID	Average Flow Rate	Destination Code	Associated Destination Information
			(See Destination Codes Table)	
		_____ *gpd,* _____ *dpy*		
		_____ *gpd,* _____ *dpy*		
		_____ *gpd,* _____ *dpy*		
		_____ *gpd,* _____ *dpy*		
		_____ *gpd,* _____ *dpy*		
		_____ *gpd,* _____ *dpy*		
		_____ *gpd,* _____ *dpy*		
		_____ *gpd,* _____ *dpy*		
		_____ *gpd,* _____ *dpy*		
		_____ *gpd,* _____ *dpy*		
		_____ *gpd,* _____ *dpy*		
		_____ *gpd,* _____ *dpy*		
		_____ *gpd,* _____ *dpy*		
		_____ *gpd,* _____ *dpy*		
		_____ gpd, _____ dpy		

CBI? ☐ Yes

2C-13. List any waste streams from Question 2C-12 that are known by the ***facility*** to be sources of ***dioxins***.

Ex: Incinerator scrubber wastewater

CBI? ☐ Yes

2C-14. Did you indicate in Question 2C-12 that this ***plant*** has in-process ***pollution prevention*** or ***pretreatment*** technologies (Destination code IP)?

☐ Yes
☐ No *(Skip to Question 2C-19)*

CBI? ☐ Yes

2C-15. In the table below, check the in-process ***pollution prevention*** or ***pretreatment*** technologies used for ***pollution prevention*** or ***pretreatment*** in this ***plant***/cell room. Provide the following additional information in the table:

- Indicate the number of units.
- Indicate whether the unit's intended purpose is for dioxin removal. If the unit is intended for dioxin removal, please provide any sampling data, including any data used to design the unit, in Section 4.
- If the treatment unit is not intended for dioxin removal, describe the purpose of the unit.

For each unit checked, please complete the detailed questions in 2C-16, 2C-17, or 2C-18.

	Unit Operation	Number of Operating Units	Is Unit Intended to Remove Dioxin?	Treatment Purpose	If this Operation is Performed, Complete the Following Question
☐	Filtration – Activated Carbon		☐ Yes ☐ No		2C-16
☐	Filtration – Membrane		☐ Yes ☐ No		2C-16
☐	Filtration – Multimedia		☐ Yes ☐ No		2C-16
☐	Filtration – Sand		☐ Yes ☐ No		2C-16
☐	Filtration – Other		☐ Yes ☐ No		2C-16
☐	Steam Stripper		☐ Yes ☐ No		2C-17
☐	Other		☐ Yes ☐ No		2C-18

For each unit checked in Question 2C-15, please complete the applicable questions from 2C-16 through 2C-18 for each operating unit. You may need to make additional copies of these questions for multiple technologies. Note that these technologies should be included on the block diagram(s) provided in Question 2C-2. Number each copy of this question in the upper right-hand corner.

CBI?
☐ Yes

2C-16. For each in-process filter used for ***pollution prevention*** or ***pretreatment*** in this ***plant***, please complete one copy of the following question.

FILTRATION: MEMBRANE, MULTI-MEDIA, SAND, OR ACTIVATED CARBON

a. Provide the treatment unit name from the block diagram..... _____

b. Provide the year of installation of the unit..... _____

c. Provide the process wastewater streams from Question 2C-12 that enter this unit..... _____ _____ _____
_____ _____ _____

d. Provide the name(s) and flow rates of any additional streams that enter this unit including any non-CCH streams. Check the box if there are no other influent streams.
☐ No additional influent streams
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm

e. Provide the destination of the treated process wastewater.....
☐ ***End-of-Pipe Wastewater Treatment System*** *(provide name)*: _____
☐ ***Discharge*** to ***surface water***
☐ Discharge to ***POTW*** or ***PrOTW***
☐ ***Zero discharge*** or alternative ***disposal*** method
☐ ***Recycle*** to process
☐ Other *(specify)*: _____

f. Indicate the mode of operation for the unit.....
☐ ***Batch***
☐ Continuous

g. Provide the average daily flow rate for the unit in 2006..... _____ gal/min

h. Provide the typical daily unit operating hours per day and days per year for 2006..... _____ hrs/day **AND**
_____ days/yr

i. Provide the ***design capacity flow rate*** for the unit..... _____ gal/min

j. Provide the unit's annual energy requirement and an indication of the type of data..... _____ kWh
☐ Manufacturer's Specification
☐ 2006 Energy Use

k. What type of filtration is performed in this unit. Check (✓) ALL that apply.....
☐ Membrane
☐ Multi-media
☐ Sand
☐ Activated Carbon
☐ Other *(specify):* _____

l. Provide the unit's operating pressure..... _____ psi

FILTRATION: MEMBRANE, MULTI-MEDIA, SAND, OR ACTIVATED CARBON

m. Provide the filter cross-sectional flow rate ..... _____ gal/ft^2

n. Provide the volume of backwash water ..... _____ gal/day

_____ dpy

o. Indicate in the table below what chemicals, if any, are added to the filtration unit:

Chemical Name	Purpose	Addition Rate
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day

p. How is the spent media handled? ..... ☐ Sent to the manufacturer for regeneration
☐ Regenerated on site
☐ Destination of regeneration wastewater _____
☐ No regeneration ***wastewater*** generated
☐ Sent to an offsite or onsite landfill
☐ Other *(specify)*: _____

q. How often is spent media removed, replaced, or regenerated? ..... _____ times per year

r. How much spent media is removed, replaced, or regenerated? ..... _____ tons per year

_____ gallons per year

CBI?
☐ Yes

2C-17. For each in-process steam stripper for ***pollution prevention*** or ***pretreatment*** in this ***plant***, please complete one copy of the following question.

STEAM STRIPPER

a. Provide the treatment unit name from the block diagram..... _____

b. Provide the year of installation of the unit..... _____

c. Provide the process wastewater streams from Question 2C-12 that enter this unit..... _____ _____ _____
_____ _____ _____

d. Provide the name(s) and flow rates of any additional streams that enter this unit including any non-CCH streams. Check the box if there are no other influent streams.
☐ No additional influent streams
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm

e. Provide the destination of the treated process wastewater .....
☐ ***End-of-Pipe Wastewater Treatment System*** *(provide name)*: _____
☐ ***Discharge*** to ***surface water***
☐ Discharge to ***POTW*** or ***PrOTW***
☐ ***Zero discharge*** or alternative ***disposal*** method
☐ ***Recycle*** to process
☐ Other *(specify)*: _____

f. Provide the ***design capacity flow rate*** for the unit ..... _____ gal/min

g. Provide the average daily flow rate for the unit for 2006..... _____ gal/min

h. Provide the typical daily unit operating hours per day and days per year for 2006..... _____ hrs/day **AND**
_____ days/yr

i. Provide the unit's annual energy requirement and an indication of the type of data..... _____ kWh
☐ Manufacturer's Specification
☐ 2006 Energy Use

j. Provide the percent of bottom stream that was ***recycled*** back to stripper feed in calendar year 2006 ..... _____ %

k. How are recovered organics handled? (Check (✓) all that apply) .....
☐ ***Recycled*** to process *(specify which)*: _____
☐ Used for onsite auxiliary fuel
☐ Sold
☐ ***Incinerated***
☐ Other *(specify):* _____

STEAM STRIPPER

l. Provide the following design and operating parameters:

Parameter	Design Value	Operating Range
Feed temperature	°F	°F
Bottoms temperature	°F	°F
Overhead temperature	°F	°F
Column operating pressure	psig	psig
Reflux ratio	%	%
Steam requirement	lb/hr	lb/hr
Steam temperature	°F	°F
Steam pressure	psig	psig
Annual energy requirement	kWh	kWh

m. Indicate column type ..... ☐ Packed
- ☐ Pall rings
- ☐ Rashing rings
- ☐ Berl saddles
- ☐ Intalox saddles
- ☐ Other *(specify)*: _____

☐ Tray
- ☐ Perforated sieve
- ☐ Bubble cap
- ☐ Valve
- ☐ Other *(specify)*: _____

☐ Number of trays *(specify)*: _____

n. Indicate in the table below what chemicals, if any, are added to the column:

Chemical Name	Purpose	Addition Rate
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day

CBI?
☐ Yes

2C-18. For any other processes for ***pollution prevention*** or ***pretreatment*** in this ***plant***, please complete one copy of the following question.

OTHER _____

a. Provide the treatment unit name from the block diagram..... _____

b. Provide the year of installation of the unit..... _____

c. Provide the process wastewater streams from Question 2C-12 that enter this unit..... _____ _____ _____ _____ _____ _____

d. Provide the name(s) and flow rates of any additional streams that enter this unit including any non-CCH streams. Check the box if there are no other influent streams.
☐ No additional influent streams
Stream name: _____ Flow rate: _____ gpm
Stream name: _____ Flow rate: _____ gpm
Stream name: _ Flow rate: ____ gpm

e. Provide the destination of the treated process wastewater .....
☐ ***End-of-Pipe Wastewater Treatment System*** *(provide name)*: _____
☐ ***Discharge*** to ***surface water***
☐ Discharge to ***POTW*** or ***PrOTW***
☐ ***Zero discharge*** or alternative ***disposal*** method
☐ ***Recycle*** to process
☐ Other *(specify)*: _____

f. Indicate the mode of operation for the unit .....
☐ ***Batch***
☐ Continuous

g. Provide the typical daily unit operating hours per day and days per year for 2006..... _____ hrs/day **AND**
_____ days/yr

h. Provide the unit's annual energy requirement and an indication of the type of data..... _____ kWh
☐ Manufacturer's Specification
☐ 2006 Energy Use

i. Provide the unit capacity..... _____ gal

j. Provide the ***design capacity flow rate*** for the unit ..... _____ gal/min

k. Provide the average daily flow rate for the unit.. _____ gal/min

l. What is the target temperature for this unit?..... _____ ° Fahrenheit

m. What is the target pH for this unit? ..... _____

n. What is the purpose of this unit? ..... _____

o. Describe the mechanism of treatment..... _____

OTHER _____

p. Indicate in the table below what chemicals, if any, are added to the column:

Chemical Name	Purpose	Addition Rate
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day
		_____ gal/day **OR** _____ lbs/day

q. Is ***sludge*** collected directly from this unit? ..... ☐ Yes ☐ No

r. Does the unit have continuous sludge removal? ..... ☐ Yes *(Skip to Question t)* ☐ No

s. How often is sludge removed?..... _____ times per year

t. How much sludge was collected in 2006?..... _____ pounds

u. What is the percent solids of the sludge?..... _____ % solids

v. Is the sludge hazardous under RCRA? ..... ☐ Yes ☐ No

CBI?
☐ Yes

2C-19. Provide information on any modifications to your PVC ***plant*** to improve treatment system performance or reduce the generation of pollutants. Also include projects currently under construction or projects for which capital has been allocated. This may include the replacement, upgrade, or addition of one or more ***unit operations*** or ***treatment units***. For purposes of this question, do not include in-kind replacement of ancillary equipment as a modification. For each modification, provide the following:

- A description of the modification.
- A list of the streams affected by the modification.
- The destination of the affected streams.
- An indication of whether the unit's intended purpose is for dioxin removal. If the unit is intended for dioxin removal, please provide any sampling data, including any data used to design the unit, in Section 4.
- If the modification is not intended for dioxin removal or has multiple purposes, describe the additional reasons for the modification (e.g., compliance with water quality limits).
- The date the projected started.
- The date the project was completed.
- The length of time the chlorine plant/cell room was shutdown to implement the modification. If no shutdown or outage was necessary for the modification, write "0" or "zero" for the length of shutdown.

Description of Modification	Streams Affected	Destination of Affected Streams	Is Modification Intended to Reduce Dioxin?	Additional Reasons for Modification	Date Project Started	Date Project Completed	Length of Shutdown (days)
			☐ Yes ☐ No				
			☐ Yes ☐ No				
			☐ Yes ☐ No				
			☐ Yes ☐ No				
			☐ Yes ☐ No				

2C-20. Provide cost data for in-process ***unit operations*** or modifications identified in Questions 2C-16 through 2A-19 that were installed between 1992 - 2006. You are required to provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates on the comments page at the end of this section. For all costs, do not adjust for inflation.

You may need to make additional copies of this question if multiple modifications are listed. You should complete one copy of this question for each copy of Questions 2C-16 through 2C-18 each row in Question 2C-19. Number each copy of this question in the upper right-hand corner.

a. For each treatment unit or modification, identify the modification and complete the table below for the costs associated with the project.

Project: _____

Type of Cost	Project	Cost	Year Cost Incurred
Direct	Purchased equipment (includes all equipment for the installation of the upgrade: mechanical equipment; electrical equipment; spare parts; freight charges; taxes; insurance; and duties)	$	
	Purchased equipment installation (includes installation of all equipment; electrical equipment; mechanical equipment; structural supports, insulation, and paint)	$	
	Instrumentation and control (includes purchase, installation, and calibration)	$	
	Piping (includes cost of pipe, pipe hangers, fittings, valves, insulation)	$	
	Buildings (buildings constructed to house treatment units, operator rooms, or other operations associated with the system; also includes plumbing, heating, ventilation, dust collection, air conditioning, lighting, telephones, intercoms, painting, sprinklers, fire alarms)	$	
	Site preparation (includes site clearing except major demolition, grading, roads, walking areas, fences)	$	
	Major site demolition (other than site preparation, see above)	$	
	Land (includes property costs and survey fees)	$	
Total Direct Costs		$	
Indirect	Engineering costs (includes process design and general engineering, drafting, cost engineering, consulting fees, supervision, inspection)	$	
	Construction expenses (includes temporary construction offices, roads, communications, fencing; construction tools and equipment; permits, taxes, insurance)	$	
	Contractor's fees	$	
	Contingency actually expended (to compensate for unpredictable events such as storms, floods, strikes, price changes, errors in estimates, design changes, etc.)	$	
Total Indirect Costs		$	
Total Capital Cost		$	

b. In the table below, itemize the purchased equipment and installation costs provided in Part (a) for each major piece of equipment. The total for purchased equipment and installation should match the responses for these items in Part (a). If the total costs for purchased equipment and installation in Part (a) and (b) differ by a factor of 10% or more, use the comments page at the end of this section to explain the difference.

Project: _____

Major Piece of Equipment	Purchased Equipment Cost	Installation Cost	Year Cost Incurred
Ex. Filter	*$ 3,000*	*$ 740*	*2006*
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
SUBTOTAL of Major Equipment Cost	$	$	

CBI?
☐ Yes

2C-21. Provide annual operation and maintenance (O&M) cost data for in-process ***unit operations*** or modifications identified in Questions 2A-16 through 2A-19 that were installed between 1992 - 2006. For each modification, complete the table below for the O&M costs incurred during the most current year of operation. You are required to provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates on the comments page at the end of this section. For all costs, do not adjust for inflation. If the first full year of operation is atypical or not representative of operation of this modification, use the comments page at the end of this section to explain.

You may need to make additional copies of this question if multiple modifications are listed. You should complete one copy of this question for each copy of Questions 2A-16 through 2A-18 each row in Question 2A-19. Number each copy of this question in the upper right-hand corner.

Project: _____

Most current full year of operation (year): _____

Type of Cost	O&M Cost Category	Cost
Operation and Maintenance	Operating labor	$
	Maintenance labor	$
	Maintenance materials	$
	Chemicals	$
	Energy: gas	$
	Energy: electric	$
	Energy: oil	$
	Energy: other *(specify)*	$
	Hazardous Sludge Disposal	$
	Nonhazardous Sludge Disposal	$
	Other *(specify)*	$
	Other *(specify)*	$
	Other *(specify)*	$
	Other *(specify)*	$
Total Operation and Maintenance Cost		**$**

CBI?
☐ Yes

2C-22. Indicate and describe existing ***pollution prevention*** (waste reduction) or ***best management practices*** for the PVC ***plant*** that impact ***process wastewater*** generation or ***pollutant*** concentrations and were not covered in Questions 2C-16 through 2C-19.

☐ Not Applicable

Management Practice	Description of Practice

COMMENTS FOR SECTION 2C: PVC MANUFACTURE

Cross reference your comments by question number and indicate the confidential status of your comment by checking (✓) the box in the column titled "CBI" (Confidential Business Information). If you need additional space, photocopy this page before writing on it, and number each copy in the space provided in the upper right corner.

Question Number	CBI?	Comment
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	

Section 2D. – Incineration and Air Pollution Control

Technical Information Helpline:

DO YOU HAVE INCINERATORS OR ***AIR POLLUTION CONTROL*** DEVICES AT YOUR ***FACILITY*** USED FOR ***CCH MANUFACTURING*** WASTE?

☐ Yes
☐ No *(Skip to Section 3)*

For each arrangement of incinerators and air pollution control (APC) devices used to treat a CCH process waste stream from its source to its release to the atmosphere operating at your facility, complete a copy of the entire Section 2D. Number each copy of Section 2D in the space provided in the upper right-hand corner. Note that these incinerators and APC devices should be noted on the diagrams you provided with Sections 2A, 2B, and 2C.

CBI? ☐ Yes

2D-1. Indicate the facility's name(s) for this incinerator/APC arrangement and the relevant block diagram ID:

CBI? ☐ Yes

2D-2. Complete the table below for each incinerator and APC device in the arrangement. Indicate the name of the unit and the number of identical units treating identical waste streams; provide a description of the incinerator or APC purpose; describe the waste stream feed to the incinerator or APC (including phase and composition); and provide the name of the resulting process wastewater stream, if any.

Example 1:

Incinerator or APC Unit Name	Number of Identical Units	Description of Purpose	Waste Stream Feed(s) to Incinerator or APC Unit	Composition of Waste Stream Feed (lb/hr)	Name of Process Wastewater Stream
Incinerator 1	2	Control air emissions	Vent gases from EDC Plant 1 (gas)	10 lb/hr chlorine, 80 lb/hr carbon, 10 lb/hr hydrogen	No wastewater
			Combined vents from Plants 3 and 4 (gas)	10 lb/hr water, 10 lb/hr chlorine, 50 lb/hr hydrogen, 30 lb/hr carbon	
HCl absorber	2	Remove acid	Incinerator 1 gases (gas)	30 lb/hr Incineration products	Recovered HCl
Caustic scrubber	2	Remove acid	HCl absorber effluent gas (gas)	30 lb/hr Incineration products	Scrubber water

Example 2:

Incinerator or APC Unit Name	Number of Identical Units	Description of Purpose	Waste Stream Feed(s) to Incinerator or APC Unit	Composition of Waste Stream Feed	Name of Process Wastewater Stream
Incinerator 2	2	Control air emissions	Column 2A bottoms (liquid)	10 lb/hr TCE, 20 lb/hr EDC, 10 lb/hr PCE, 10 lb/hr chloroform, 50 lb/hr other chlorinated hydrocarbons	No wastewater
Electrostatic Precipitator	1	Remove particulate matter	Incinerator 2 gases (gas)	40 lb/hr Incineration products	WESP wastewater

Incinerator or APC Unit Name	Number of Identical Units	Description of Purpose	Waste Stream Feed(s) to Incinerator or APC Unit	Composition of Waste Stream Feed	Name of Process Wastewater Stream

CBI?
☐ Yes

2D-3. Provide the following information about each incinerator listed in 2D-2:

- Incinerator name.
- Incinerator type (i.e., thermal or catalytic).
- Operating temperature range.
- Firing rate.
- Residence time.
- Combustion chamber working volume.
- Flue gas cooling mechanism.
- Temperature of cooled flue gas.

Note that you do not need to provide information more than one time for identical incinerators burning identical waste streams.

Example Table:

Incinerator Name	Description of Incinerator Type	Incinerator Operating Temperature Range (°F)	Firing Rate (MMBTU/hr)	Residence Time (s)	Combustion Chamber Working Volume (ft^3)	Flue Gas Cooling Mechanism	Temperature of Cooled Flue Gas (°F)
Ex. Incinerator 1	☑ Thermal ☐ Catalytic Catalyst material: _____	*2,000-2,200*	*210,000*	*2.3*	*180*	☐ Waste heat boiler or preheat exchanger ☑ Quench ☐ Other *(specify):* _____	*380*
	☐ Thermal ☐ Catalytic Catalyst material: _____					☐ Waste heat boiler or preheat exchanger ☐ Quench ☐ Other *(specify):* _____	
	☐ Thermal ☐ Catalytic Catalyst material: _____					☐ Waste heat boiler or preheat exchanger ☐ Quench ☐ Other *(specify):* _____	
	☐ Thermal ☐ Catalytic Catalyst material: _____					☐ Waste heat boiler or preheat exchanger ☐ Quench ☐ Other *(specify):* _____	

CBI?
☐ Yes

2D-4. For each ***process wastewater*** stream identified in question 2D-2, complete a row in the table on the following page. Include the following in the table:

- Name of each process wastewater stream.
- Block diagram ID where the process wastewater source is depicted.
- Average daily flow rate and operating days per year.
- Process wastewater destination code and associated details from the table below.

If you need additional rows, copy the table as necessary. Note that you should include all process wastewater streams including streams that may be reused or recycled. For example, the HCl absorber stream may be reused for an acid wash at a chlorinated hydrocarbon plant or used for pH control at the wastewater treatment plant.

Process wastewater sources may include, but are not limited to:

- Quench water.
- HCl absorber water.
- Caustic scrubber water.
- Wet electrostatic precipitator water.

Destination Codes

Destination Description	Code	Process Wastewater Destination Details
Sent to In-process ***treatment unit*** (i.e. ***pollution prevention*** or ***pretreatment*** technologies)	IP	Provide name of treatment unit (from block diagrams)
Wastewater treatment system	WWT	Provide name of Wastewater Treatment System
Discharge without treatment by pipeline, sewer, or other conveyance to ***surface water***	SW	Provide name of Outfall
Discharge to ***POTW***, no treatment:	POTWRAW	Provide name of POTW
Discharge to ***PrOTW***, no treatment:	PrOTWRAW	Provide name of PrOTW
Zero discharge or alternative ***disposal*** method	ZEROALT	Describe method (attach additional pages as necessary)
Recycle to process	RECYC	Describe where in the process the stream is recycled
Reused in cooling towers	COOLW	
Deep-well ***injection***	DWELL	
Evaporation	EVAP	
Contract hauled	CHAUL	
Other	OTHER	Describe (attach additional pages as necessary)

Section Copy ____ of ____

Process Wastewater Flows and Destination Table

Question 2D-4, continued

Example Process Wastewater Table:

Name of Process Wastewater Stream	Block Diagram ID	Average Flow Rate	Destination Code	Associated Destination Information (See Destination Codes Table)
Examples:				
HCl absorber – Recovered HCl	*2B-1*	*1,000 gpd, 350 dpy*	*RECYC*	*Used for pH adjust in WWT system.*
Caustic scrubber	*2B-1*	*1,000 gpd, 350 dpy*	*WWT*	*Biological Treatment System*

Name of Process Wastewater Stream	Block Diagram ID	Average Flow Rate	Destination Code	Associated Destination Information (See Destination Codes Table)
		_____ *gpd,* _____ *dpy*		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		
		_____ gpd, _____ dpy		

2D-5. Provide cost data for each incinerator or APC device identified in Question 2D-2 that was installed between 1992 - 2006. You are required to provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates on the comments page at the end of this section. For all costs, do not adjust for inflation.

You should make additional copies of this question if multiple incinerators or APC devices are listed. Number each copy of this question in the upper right-hand corner.

a. For each incinerator or APC device, provide its name and cost information in the table below.

Incinerator or APC Device: _____

Type of Cost	Project	Cost	Year Cost Incurred
Direct	Purchased equipment (includes all equipment for the installation of the upgrade: mechanical equipment; electrical equipment; spare parts; freight charges; taxes; insurance; and duties)	$	
	Purchased equipment installation (includes installation of all equipment; electrical equipment; mechanical equipment; structural supports, insulation, and paint)	$	
	Instrumentation and control (includes purchase, installation, and calibration)	$	
	Piping (includes cost of pipe, pipe hangers, fittings, valves, insulation)	$	
	Buildings (buildings constructed to house treatment units, operator rooms, or other operations associated with the system; also includes plumbing, heating, ventilation, dust collection, air conditioning, lighting, telephones, intercoms, painting, sprinklers, fire alarms)	$	
	Site preparation (includes site clearing except major demolition, grading, roads, walking areas, fences)	$	
	Major site demolition (other than site preparation, see above)	$	
	Land (includes property costs and survey fees)	$	
Total Direct Costs		$	
Indirect	Engineering costs (includes process design and general engineering, drafting, cost engineering, consulting fees, supervision, inspection)	$	
	Construction expenses (includes temporary construction offices, roads, communications, fencing; construction tools and equipment; permits, taxes, insurance)	$	
	Contractor's fees	$	
	Contingency actually expended (to compensate for unpredictable events such as storms, floods, strikes, price changes, errors in estimates, design changes, etc.)	$	
Total Indirect Costs		$	
Total Capital Cost		$	

b. In the table below, itemize the purchased equipment and installation costs provided in Part (a) for each major piece of equipment. If the total costs for purchased equipment and installation in Question 2A-51(a) and (b) differ by a factor of 10% or more, use the comments page at the end of this section to explain the difference.

Incinerator or APC device: _____

Major Piece of Equipment	Purchased Equipment Cost	Installation Cost	Year Cost Incurred
Ex. Membrane Filter	*$ 3,000*	*$ 250*	*2001*
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
SUBTOTAL of Major Equipment Cost	$	$	

CBI?
☐ Yes

2D-6. Provide annual operation and maintenance (O&M) cost data for each incinerator or APC device identified in Question 2D-2 that was installed between 1992 - 2006. For each project, complete the table below for the O&M costs incurred during the most current year of operation. You are required to provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates on the comments page at the end of this section. For all costs, do not adjust for inflation. If the first full year of operation is atypical or not representative of operation of this device, use the comments page at the end of this section to explain.

You should make additional copies of this question if multiple incinerators or APC devices are listed. Number each copy of this question in the upper right-hand corner.

Incinerator or APC device: _____

Most current full year of operation (year): _____

Type of Cost	O&M Cost Category	Cost
Operation and Maintenance	Operating labor	$
	Maintenance labor	$
	Maintenance materials	$
	Chemicals	$
	Energy: gas	$
	Energy: electric	$
	Energy: oil	$
	Energy: other *(specify)*	$
	Hazardous Sludge Disposal	$
	Nonhazardous Sludge Disposal	$
	Other *(specify)*	$
	Other *(specify)*	$
	Other *(specify)*	$
	Other *(specify)*	$
Total Operation and Maintenance Cost		**$**

COMMENTS FOR SECTION 2D: INCINERATION AND AIR POLLUTION CONTROL

Cross reference your comments by question number and indicate the confidential status of your comment by checking (✓) the box in the column titled "CBI" (Confidential Business Information). If you need additional space, photocopy this page before writing on it, and number each copy in the space provided in the upper right corner.

Question Number	CBI?	Comment
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	

SECTION 3 – WASTEWATER TREATMENT AND CHARACTERIZATION

GENERAL INSTRUCTIONS

Carefully read the instructions that appear throughout this section and refer to the Definitions Section for terms that are used in this questionnaire. This section needs to be photocopied before responding if your facility has multiple wastewater treatment systems. For copied sections, number the copies using the space provided at the top of the pages.

Indicate information that should be treated as confidential by checking the Confidential Business Information (CBI) box next to each question number with responses containing CBI. Any response where "CBI" is not checked will be considered nonconfidential. Refer to the instructions given in the CONFIDENTIAL BUSINESS INFORMATION section on page iii for additional information regarding EPA's confidentiality procedures set forth in 40 CFR Part 2, Subpart B.

EPA requires a block diagram for each wastewater treatment system on site. You are **NOT** required to create a new block diagram if an existing diagram will suffice.

Treatment System Name _____

SECTION 3 – WASTEWATER TREATMENT AND CHARACTERIZATION

Is any ***wastewater treatment*** performed at your ***facility***?

☐ Yes
☐ No *(Skip to Section 4)*

How many wastewater treatment systems does your plant operate? _____

Throughout Section 3, you will be required to provide information for all ***end-of-pipe wastewater treatment systems*** that treat ***wastewater*** from any combination of the following CCH process wastewaters: process ***discharges***, ***WAPC*** device discharges, ***stormwater,*** in-process ***wastewater treatment*** system discharges, or ***pretreatment*** system discharges. **Please complete one copy of this section for each wastewater treatment system that your plant operates.**

CBI?
☐ Yes

3-1. Please review the following example diagram (Example 3-1). Attach a block diagram that shows each ***treatment unit*** in the ***wastewater treatment*** system and the water flow through this treatment system. Specific instructions for including the block diagram(s) are provided in the checklist below. The diagram should have a similar level of detail as EPA's Example 3-1. You may use an existing diagram and mark the additional required information on the diagram by hand.

Provide as many diagrams as necessary to convey the information requested in the checklist below. Number each block diagram in the upper right corner beginning with 3-X; the first block diagram in Section 3 should be numbered Block Diagram 3-1, the second 3-2, etc. Also include the EPA-designated facility ID number (as shown on the cover page of Part A) in the upper right hand corner.

Provide the block diagram number(s) assigned to the wastewater treatment diagram(s) on the line below. If the information for this wastewater treatment plant was included on another diagram provided for this section, provide the block diagram number below.

Wastewater treatment system name _____

Block Diagram(s) - _____

Block Diagram Checklist:

Be sure to ...

☐ Write the block diagram number, your EPA-designated facility ID number, and the wastewater treatment system name(s) on the diagram.

☐ Include influent streams, including non-CCH process wastewater streams that enter the treatment system. Sources include but are not limited to: ***process wastewater***, ***stormwater***, effluent from in-process treatment systems, groundwater, utility wastewater, and landfill leachate. Be sure process wastewater streams from other block diagrams match the wastewater influent streams to the wastewater treatment system. Be sure to include all streams listed in Questions 2A-43, 2B-38, 2C-12, and 2D-4.

☐ Label each stream on the diagram with a unique descriptive name. Streams for filtrates, supernatants, or ***recycle*** streams should be labeled.

☐ Include the flow rates for streams on the diagram (e.g., ***recycle***, reuse, or effluent streams).

Treatment System Name _____

Note whether flow is ***intermittent***.

☐ Identify any chemicals and/or additives entering each treatment unit.

☐ Include the destination of treated wastewater using the destination codes provided in the destination codes table. Destinations include but are not limited to: ***surface water*** (specify name and outfall number), ***POTWs***, reuse in other manufacturing processes (specify processes), other wastewater treatment systems (specify systems), and onsite and offsite ***disposal*** locations.

Destination Codes

Destination Description	Code	Wastewater Destination Details
Wastewater treatment system	WWT	Provide name of Wastewater Treatment System
Discharge without treatment by pipeline, sewer, or other conveyance to ***surface water***	SW	Provide name of Outfall
Discharge to ***POTW***, no treatment:	POTWRAW	Provide name of POTW
Discharge to ***PrOTW***, no treatment:	PrOTWRAW	Provide name of PrOTW
Zero discharge or alternative ***disposal*** method	ZEROALT	Describe method (attach additional pages as necessary)
Recycle to process	RECYC	Describe where in the process the stream is recycled
Reused in cooling towers	COOLW	
Deep-well ***injection***	DWELL	
Evaporation	EVAP	
Contract hauled	CHAUL	Provide disposal rate, including transportation, and provide destination/disposal method
Other	OTHER	Describe (attach additional pages as necessary)

Treatment System Name _____

☐ Label wastewater treatment units. For each unit shown on the diagram, identify the unit operation being performed using the codes from the following list of Wastewater Treatment Unit Codes:

Wastewater Treatment (WWT) Operation	WWT Unit Code
Biological Treatment – Activated Sludge	WBT
Clarification/Sedimentation	WCL
Dissolved Air Flotation Tank	WDF
Filtration – Activated Carbon	WFA
Filtration – Membrane	WFM
Filtration – Multimedia	WFU
Filtration – Other	WFO
Filtration – Sand	WFS
Oil Removal	WOR
Settling Basin/Pond (not used for biological treatment)	WSB
Sludge Dewatering	WSD
Steam Stripper	WST
Tank – Air added (aeration tank not used for biological treatment)	WAE
Tank – Chemical mix	WCM
Tank – Equalization (or equalization basin)	WEQ
Tank – Holding	WHT
Tank – Neutralization/pH adjust	WNE
Other	WOT

☐ Identify each operating unit by assigning a unique unit code beginning with xxx-1, where xxx indicates the associated WWT unit code. For example, if a diagram shows one neutralizer and two clarifiers, identify these units as: WNE-1, WCL-1, and WCL-2. You will use these unit labels to complete Questions 3-2 through 3-26 on Wastewater Treatment Technologies.

☐ Identify the destination of ***sludges***, oils, and other wastes leaving the system.

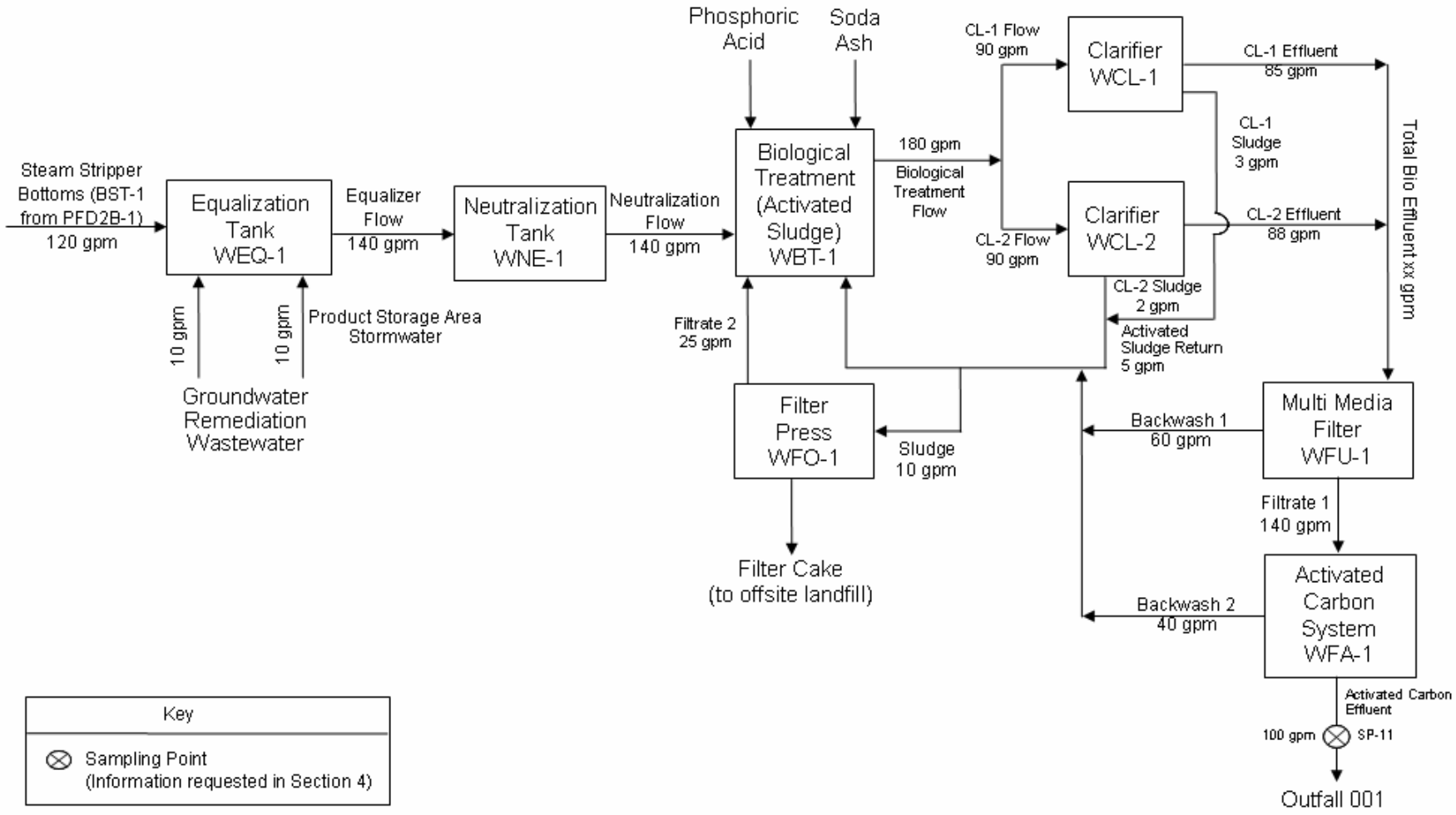
If you believe that the diagram should be treated as confidential, stamp it "Confidential" or write "Confidential" or "CBI" across the top. If any diagram is not marked "Confidential", it will be considered nonconfidential under 40 CFR Part 2, Subpart B.

Review:
If any of the statements above were not checked, please revise the block diagram(s) and ensure all statements have been checked.

Treatment System Name _____

Example 3-1 Chlorinated Hydrocarbon (EDC/VCM) Wastewater Treatment System Block Diagram

Block Diagram 3-1
Facility ID: _____



Treatment System Name _____

Please complete Questions 3-2 through 3-26 for each wastewater treatment system your facility operates.

CBI? ☐ Yes

3-2. Is this wastewater treatment system ***batch*** or ***continuous***?

☐ Batch

☐ Continuous *(Skip to Question 3-5)*

CBI? ☐ Yes

3-3. On average how many batches per day did this wastewater treatment system treat in 2006?

_____ average batches per day

CBI? ☐ Yes

3-4. What was the typical batch volume treated by this wastewater treatment system in 2006?

_____ gallons per batch

CBI? ☐ Yes

3-5. What is the wastewater treatment system ***design capacity flow rate***?

_____ gallons per day design

OR

_____ gallons per batch design

CBI? ☐ Yes

3-6. What was the average volume treated per operating day by this wastewater treatment system in 2006?

_____ gallons per day

CBI? ☐ Yes

3-7. How many hours per operating day was this wastewater treatment system operated in 2006?

_____ hours per day

CBI? ☐ Yes

3-8. How many days per year was this wastewater treatment system operated in 2006?

_____ days per year

CBI? ☐ Yes

3-9. Provide a list of ***pollutants*** targeted for removal by this system.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Treatment System Name _____

CBI?
☐ Yes

3-10. Provide a list of chemicals added to this treatment system. List the treatment unit number from the block diagram, the purpose of the chemical addition, and the addition rate. You may need to complete multiple lines in the table for one chemical. For example, if HCl enters the treatment system at three different units, you could have the following entries:

Example Chemical Addition Table:

Chemical Name	Treatment Unit	Purpose	Concentration	Addition Rate (gal/day)
HCl	WBT-1	pH adjust	1 M	50
HCl	WCL-1	pH adjust	0.5 M	10
HCl	WNE-1	pH adjust	1 M	75

Chemical Name	Treatment Unit	Purpose	Concentration	Addition Rate (gal/day)

Treatment System Name ______________

CBI?
☐ Yes

3-11. Provide the following information on the ***sludge*** removed from this treatment system:

- Treatment unit identification number from which sludge is removed. Include only those treatment units where sludge is removed from the system (do not include sludge recycling).
- The amount of sludge removed in 2006. Provide the units.
- Percent solids of the sludge removed.
- An indication of whether the sludge is a RCRA hazardous waste.
- The destination of the sludge.

Treatment Unit	Amount/Volume of Sludge Removed (gallons or pounds)	Percent Solids	RCRA Hazardous Waste	Destination
			☐ Yes ☐ No	☐ Offsite Landfill ☐ Onsite Landfill ☐ Contract Hauled ☐ Other: ______________
			☐ Yes ☐ No	☐ Offsite Landfill ☐ Onsite Landfill ☐ Contract Hauled ☐ Other: ______________
			☐ Yes ☐ No	☐ Offsite Landfill ☐ Onsite Landfill ☐ Contract Hauled ☐ Other: ______________
			☐ Yes ☐ No	☐ Offsite Landfill ☐ Onsite Landfill ☐ Contract Hauled ☐ Other: ______________
			☐ Yes ☐ No	☐ Offsite Landfill ☐ Onsite Landfill ☐ Contract Hauled ☐ Other: ______________

Treatment System Name ______________

CBI?
☐ Yes

3-12. Provide the following information on the oil removed from this treatment system:

- Treatment unit identification number from which oil is removed. Include only those treatment units where oil is removed from the system.
- The amount of oil removed. Provide the units.
- An indication of whether the oil is a RCRA hazardous waste.
- The destination of the oil.

Treatment Unit	Amount/Volume of Oil Removed	RCRA Hazardous Waste	Destination
		☐ Yes ☐ No	☐ Offsite Landfill ☐ Onsite Landfill ☐ Contract Hauled ☐ Other: ______________
		☐ Yes ☐ No	☐ Offsite Landfill ☐ Onsite Landfill ☐ Contract Hauled ☐ Other: ______________
		☐ Yes ☐ No	☐ Offsite Landfill ☐ Onsite Landfill ☐ Contract Hauled ☐ Other: ______________
		☐ Yes ☐ No	☐ Offsite Landfill ☐ Onsite Landfill ☐ Contract Hauled ☐ Other: ______________
		☐ Yes ☐ No	☐ Offsite Landfill ☐ Onsite Landfill ☐ Contract Hauled ☐ Other: ______________

Treatment System Name _____

Question Copy ____ **of** ____

CBI?
☐ Yes

3-13. Provide information on any modifications that occurred in your wastewater treatment system to improve ***pollution prevention*** or system efficiency from 1992-2006. Also include projects currently under construction or projects for which capital has been allocated. This may include the replacement, upgrade, or addition of one or more ***treatment units***. For purposes of this question, do not include in-kind replacement of ancillary equipment as a modification. For each modification, provide the start date and completion date for the modification. Explain why the treatment units have been upgraded or added (e.g., compliance with water quality limits, improve dioxins removal). If no shutdown or outage was necessary for the modification, write "0" or "zero" for the length of shutdown.

Treatment Unit Name	Description of Modification and Reason for Modification	Date Project Started	Date Project Completed	Length of Shutdown (days)

Treatment System Name _____

Question Copy ____ **of** ____

CBI?
☐ Yes

3-14. Question 3-14 requires you to provide cost data for modifications made to your wastewater treatment system identified in Question 3-13, and for filtration units identified in Question 3-20 that were installed between 1992 and 2006. You are required to provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates on the comments page at the end of this section. For all costs, do not adjust for inflation. You may need to make additional copies of this question if multiple modifications are listed. Number each copy of this question in the upper right-hand corner.

a. For each modification that occurred at this wastewater treatment system, identify the modification and complete the table below for the costs associated with the project.

Project: _____

Type of Cost	Project	Cost	Year Cost Incurred
Direct	Purchased equipment (includes all equipment for the installation of the upgrade: mechanical equipment; electrical equipment; spare parts; freight charges; taxes; insurance; and duties)	$	
	Purchased equipment installation (includes installation of all equipment; electrical equipment; mechanical equipment; structural supports, insulation, and paint)	$	
	Instrumentation and control (includes purchase, installation, and calibration)	$	
	Piping (includes cost of pipe, pipe hangers, fittings, valves, insulation)	$	
	Buildings (buildings constructed to house treatment units, operator rooms, or other operations associated with the system; also includes plumbing, heating, ventilation, dust collection, air conditioning, lighting, telephones, intercoms, painting, sprinklers, fire alarms)	$	
	Site preparation (includes site clearing except major demolition, grading, roads, walking areas, fences)	$	
	Major site demolition (other than site preparation, see above)	$	
	Land (includes property costs and survey fees)	$	
Total Direct Costs		$	
Indirect	Engineering costs (includes process design and general engineering, drafting, cost engineering, consulting fees, supervision, inspection)	$	
	Construction expenses (includes temporary construction offices, roads, communications, fencing; construction tools and equipment; permits, taxes, insurance)	$	
	Contractor's fees	$	
	Contingency actually expended (to compensate for unpredictable events such as storms, floods, strikes, price changes, errors in estimates, design changes, etc.)	$	
Total Indirect Costs		$	
Total Capital Cost		$	

Treatment System Name _____

Question Copy ____ **of** ____

b. In the table below, itemize the purchased equipment and installation costs provided in Question 3-14(a) for each major piece of equipment. Examples of major pieces of equipment are listed below the table. If the total costs for purchased equipment and installation in Question 3-14(a) and (b) differ by a factor of 10% or more, use the comments page at the end of this section to explain the difference.

Project: _____

Major Piece of Equipment	Purchased Equipment Cost	Installation Cost	Year Cost Incurred
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
	$	$	
SUBTOTAL of Major Equipment Cost	$	$	

Examples of major pieces of equipment:

Aerator
Agitator
Chemical feed system (specify chemical)
Clarifier
Filter, wastewater (specify media)
Ion exchange system
Oil/water separator (specify type)
Pump, sludge (specify location)
Pump, wastewater (specify location)
Sludge dryer
Tank, concrete (specify in ground or above)
Tank, steel (specify in ground or above)

Treatment System Name _____

Question Copy ____ **of** ____

CBI?
☐ Yes

3-15. For the most recent full year of operation for each modification that occurred at this wastewater treatment system identified in Question 3-13, and for each filtration unit identified in Question 3-20 that was installed between 1992 and 2006, complete the table below for the annual costs associated with the project. You are required to provide best engineering estimates when actual data are not readily available. If you provide an estimate, note the methods that were used to make the estimates on the comments page at the end of this section. For all costs, do not adjust for inflation. If the first full year of operation is atypical or not representative of operation of this modification, use the comments page at the end of this section to explain.

Project: _____

Most current full year of operation (year): _____

Type of Cost	O&M Cost Category	Cost
Operation and Maintenance	Operating labor	$
	Maintenance labor	$
	Maintenance materials	$
	Chemicals	$
	Energy: gas	$
	Energy: electric	$
	Energy: oil	$
	Energy: other *(specify)*	$
	Hazardous Sludge Disposal	$
	Nonhazardous Sludge Disposal	$
	Other *(specify)*	$
	Other *(specify)*	$
	Other *(specify)*	$
	Other *(specify)*	$
Total Operation and Maintenance Cost		**$**

Treatment System Name _____

CBI?
☐ Yes

3-16. Wastewater Treatment

In the table below, please check the ***treatment units*** used in this ***wastewater treatment*** system and provide the number of operating units. Note, all treatment units listed below should be shown on the block diagram in Question 3-1. Check (✓) ALL that apply.

Wastewater Treatment System: _____

Example: EDC/VCM Wastewater Treatment System

	Wastewater Treatment (WWT) Unit Operation	WWT Unit Code	Number of Operating Units	If this Wastewater Treatment Operation is Performed, Complete One Copy of the Following Question for Each Operating Unit
☐	Biological Treatment – Activated Sludge	WBT		3-17
☐	Clarification/Sedimentation	WCL		3-18
☐	Dissolved Air Flotation	WDF		3-19
☐	Filtration – Activated Carbon	WFA		3-20
☐	Filtration – Membrane	WFM		3-20
☐	Filtration – Multimedia	WFU		3-20
☐	Filtration – Other	WFO		3-20
☐	Filtration – Sand	WFS		3-20
☐	Oil Removal	WOR		3-21
☐	Settling Basin/Pond (not used for biological treatment)	WSB		3-22
☐	Sludge Dewatering	WSD		3-23
☐	Steam Stripper	WST		3-24
☐	Tank – Air added (aeration tank not used for biological treatment)	WAE		3-25
☐	Tank – Chemical Mix	WCM		3-25
☐	Tank – Equalization (or Equalization Basin)	WEQ		3-25
☐	Tank – Holding	WHT		3-25
☐	Tank – Neutralization/pH adjust	WNE		3-25
☐	Other	WOT		3-26

For each treatment unit checked in Question 3-16, please complete the applicable questions from Questions 3-17 through 3-25 that best describe the treatment unit. Complete Question 3-26 to describe any treatment unit indicated on the wastewater treatment system block diagram that does not fit into any of the categories listed above.

Treatment System Name _____

Activated Sludge Unit ____ **of** ____

CBI?
☐ Yes

3-17. Biological Treatment and Clarification

Complete a copy of Question 3-17 for EACH biological treatment unit used in this wastewater treatment system. Identify the unit number in the upper right hand corner. Note: This question is 2 pages long.

BIOLOGICAL TREATMENT AND CLARIFICATION

a. Provide the treatment unit name from the block diagram..... _____

b. Provide the year of installation of the unit..... _____

c. Indicate the mode of operation for the unit ..... ☐ ***Batch***
☐ Continuous

d. Provide the unit capacity..... _____ gal

e. Provide the ***design capacity flow rate*** for the unit ..... _____ gal/min

f. Provide the unit's annual energy requirement and an indication of the type of data..... _____ kWh
☐ Manufacturer's Specification
☐ 2006 Energy Use

g. What type of activated ***sludge*** process is in operation? Check (✓) one.....
☐ Conventional (Plug Flow) Activated Sludge
☐ Complete Mix Activated Sludge
☐ Step-Feed Activated Sludge
☐ Contact Stabilization Activated Sludge
☐ Extended Aeration Activated Sludge
☐ High Purity Oxygen Activated Sludge
☐ Selector Activated Sludge
☐ Sequencing ***Batch*** Reactor Activated Sludge
☐ Other *(specify)*: _____

h. What kind of device is used to transfer air or oxygen and maintain the flocculent biomass in suspension? Check (✓) ALL that apply. .....
☐ Floating/fixed mechanical surface aerators
☐ Jet aerators
☐ Submerged turbine aerators
☐ Diffused air (coarse and/or fine bubbles)
☐ Auxiliary mechanical devices *(specify)*: _____
☐ Other *(specify)*: _____

i. Provide the unit liquid depth..... _____ feet

j. Provide the volume of aeration zone ..... _____ ft^3

k. Provide the air or oxygen flow to the unit..... _____ ft^3/min, air
OR
_____ ft^3/min, oxygen

l. Provide the sludge retention time (SRT)..... _____ days

m. Provide the target mixed liquor suspended solids (MLSS) concentration range..... _____ mg/L

Treatment System Name _____

Activated Sludge Unit ____ **of** ____

3-17. Biological Treatment and Clarification (Continued)

BIOLOGICAL TREATMENT AND CLARIFICATION

n. Provide the design loading to the treatment system	_____	BOD lbs/day **OR** _____ COD lbs/day
o. Is temperature control required?	☐ Yes *(specify method)*: _____ ☐ No	
p. Provide the feed to microorganism (F/M) ratio	_____	lb BOD /lb MLSS
q. Provide operating temperature	_____	°F
r. Do you control sludge retention time (SRT) by wasting sludge from the clarifier?	☐ Yes ☐ No *(Skip to Question u)*	
s. Provide the return activated sludge (RAS) solids concentration	_____	mg/L or %
t. Provide the RAS flow	_____	gal/min
u. Provide the residence time in the clarifier	_____	days
v. Provide the clarifier overflow rate	_____	gal/ft^2

Treatment System Name _____

Clarification/Sedimentation Unit ____ **of** ____

CBI?
☐ Yes

3-18. Clarification/Sedimentation

Complete a copy of Question 3-18 for EACH clarification/sedimentation unit used in this *wastewater treatment* system not already described as part of an activated *sludge* unit. Identify the unit number in the upper right hand corner.

CLARIFICATION/SEDIMENTATION		
a. Provide the treatment unit name from the block diagram	_____	
b. Provide the year of installation of the unit:	_____	
c. Indicate the mode of operation for the unit	☐ ***Batch*** ☐ Continuous	
d. Provide the unit capacity	_____	gal
e. Provide the ***design capacity flow rate*** for the unit	_____	gal/min
f. Provide the unit's annual energy requirement and an indication of the type of data	_____ ☐ Manufacturer's Specification ☐ 2006 Energy Use	kWh
g. Provide the average daily flow rate for the unit for 2006	_____	gal/min
h. Provide the unit's residence time	_____	days
i. Provide the unit's overflow rate	_____	gal/ft^2
j. What is the target pH for this unit?	_____	

Treatment System Name _____

Dissolved Air Flotation Unit ____ **of** ____

CBI?
☐ Yes

3-19. Dissolved Air Flotation (DAF)

Complete a copy of Question 3-19 for EACH DAF unit used in this *wastewater treatment* system. Identify the unit number in the upper right hand corner.

DISSOLVED AIR FLOTATION (DAF)

a. Provide the treatment unit name from the block diagram	_____	
b. Provide the year of installation of the unit:	_____	
c. Indicate the mode of operation for the unit	☐ ***Batch*** ☐ Continuous	
d. Provide the unit capacity	_____	gal
e. Provide the ***design capacity flow rate*** for the unit	_____	gal/min
f. Provide the unit's annual energy requirement and an indication of the type of data	_____ ☐ Manufacturer's Specification ☐ 2006 Energy Use	kWh
g. Provide the average daily flow rate for the unit for 2006	_____	gal/min
h. Provide the design solids loading rate	_____	$lb/day/ft^2$
i. Provide the unit's residence time	_____	days
j. Indicate type of air used	☐ Air ☐ Oxygen	
k. Provide the air/oxygen flow rate	_____	ft^3/min
l. Provide the unit's air/oxygen to solids ratio	_____	lb air/lb solids

Treatment System Name _____

Filtration Unit Type: _____

Filtration Unit ____ **of** ____

CBI?
☐ Yes

3-20. Filtration: Membrane, Multi-Media, Sand or Activated Carbon

Complete a copy of Question 3-20 for EACH filtration unit used in this *wastewater treatment* system. Identify the type of unit and unit number in the upper right hand corner.

FILTRATION: MEMBRANE, MULTI-MEDIA, SAND, OR ACTIVATED CARBON

a. Provide the treatment unit name from the block diagram..... _____

b. Provide the year of installation of the unit..... _____

c. Indicate the mode of operation for the unit ..... ☐ ***Batch***
☐ Continuous

d. Provide the ***design capacity flow rate*** for the unit ..... _____ gal/min

e. Provide the unit's annual energy requirement and an indication of the type of data..... _____ kWh
☐ Manufacturer's Specification
☐ 2006 Energy Use

f. Provide the average daily flow rate for the unit for 2006..... _____ gal/min

g. What type of filtration is performed in this unit. Check (✓) ALL that apply..... ☐ Membrane
☐ Multi-media
☐ Sand
☐ Activated Carbon
☐ Other *(specify):* _____

h. Provide the unit's operating pressure ..... _____ psia

i. Provide the filter cross-sectional flow rate ..... _____ gal/ft^2

j. Provide the volume of backwash water ..... _____ gal/day
_____ dpy

k. How is the spent media handled?..... ☐ Sent to the manufacturer for regeneration
☐ Regenerated on site
☐ Destination of regeneration wastewater
_____
☐ No regeneration ***wastewater*** generated
☐ To an offsite or onsite landfill
☐ Other *(specify)*: _____

l. How often is spent media removed, replaced, or regenerated? ..... _____ times per year

m. How much spent media is removed, replaced, or regenerated? ..... _____ tons per year
_____ gallons per year

Treatment System Name _____

Oil Removal Unit ____ **of** ____

CBI?
☐ Yes

3-21. Oil Removal

Complete a copy of Question 3-21 for EACH oil removal unit used in this *wastewater treatment* system. Identify the unit number in the upper right hand corner. Complete this question only for oil removal treatment units that are used within this wastewater treatment system. Do not include equipment oil removal (e.g., pump lubrication).

OIL REMOVAL

a. Provide the treatment unit name from the block diagram ..... _____

b. Provide the year of installation of the unit..... _____

c. Indicate the mode of operation for the unit ..... ☐ ***Batch***
☐ Continuous

d. Provide the ***design capacity flow rate*** for the unit ..... _____ gal/min

e. Provide the unit's annual energy requirement and an indication of the type of data..... _____ kWh
☐ Manufacturer's Specification
☐ 2006 Energy Use

f. Provide the average daily flow rate for the unit for 2006 ..... _____ gal/min

g. What type of oil removal unit is in operation? Check (✓) ALL that apply..... ☐ API Oil/Water Separator
☐ Oil/Water Separator, Other
☐ Mechanical Arm Skimmer
☐ Rope skimmer
☐ Other *(specify)*: _____

Treatment System Name _____

Settling Pond/Basin ____ **of** ____

CBI?
☐ Yes

3-22. Settling Basin/Pond (not used for biological treatment)

Complete a copy of Question 3-22 for EACH settling basin/pond used in this *wastewater treatment* system. Identify the unit number in the upper right hand corner.

SETTLING BASIN/POND

a. Provide the treatment unit name from the block diagram..... _____

b. Provide the year of installation of the unit..... _____

c. Provide the ***design capacity flow rate*** for the unit ..... _____ gal/min

d. Provide the average daily flow rate for the unit for 2006..... _____ gal/min

e. Provide the basin/pond capacity..... _____ gal

f. What is the purpose of the pond? Check (✓) ALL that apply..... ☐ Holding ☐ Settling

g. Is pond lined?..... ☐ Yes
- ☐ Earthen
- ☐ Concrete
- ☐ Other *(specify)*: _____

☐ No

h. Is pond aerated?..... ☐ Yes ☐ No

Treatment System Name _____

Sludge Dewatering Unit ____ **of** ____

CBI?
☐ Yes

3-23. Sludge Dewatering

Complete a copy of Question 3-23 for EACH *sludge* dewatering unit used in this *wastewater treatment* system. Identify the unit number in the upper right hand corner.

SLUDGE DEWATERING

a. Provide the treatment unit name from the block diagram..... _____

b. Provide the year of installation of the unit..... _____

c. Indicate the mode of operation for the unit ..... ☐ ***Batch***
☐ Continuous

d. Provide the ***design capacity flow rate*** for the unit ..... _____ gal/min

e. Provide the unit's annual energy requirement and an indication of the type of data..... _____ kWh
☐ Manufacturer's Specification
☐ 2006 Energy Use

f. Provide the average daily flow rate of sludge into the unit for 2006 ..... _____ gal/min

g. Indicate the percent solids in the influent (feed)..... _____ %

h. Indicate the percent solids in the effluent (cake) ..... _____ %

i. What type of sludge dewatering unit is in operation? .....
☐ Belt filter
☐ V-filter
☐ Plate-and-frame filter
☐ Sludge dryer
☐ Screw press
☐ Centrifuge
☐ Rotary vacuum filter
☐ Other *(specify)*: _____

Treatment System Name _____

Steam Stripper ____ **of** ____

CBI?
☐ Yes

3-24. Steam Stripper

Complete a copy of Question 3-24 for EACH steam stripper unit used in this *wastewater treatment* system. Identify the unit number in the upper right hand corner. Note: This question is 2 pages long.

STEAM STRIPPER

a. Provide the treatment unit name from the block diagram ..... _____

b. Provide the year of installation of the unit .... _____

c. Provide the ***design capacity flow rate*** for the unit ..... _____ gal/min

d. Provide the average daily flow rate for the unit for 2006 ..... _____ gal/min

e. Provide the percent of bottom stream that was recycled back to stripper feed in calendar year 2006 ..... _____ %

f. How does the wastewater travel from the process area to the stripper? .....
- ☐ Open channel or sewer
- ☐ Enclosed pipe
- ☐ Other *(specify)*: _____

g. How are recovered organics handled? (Check (✓) all that apply) .....
- ☐ Recycled to process *(specify which)*: _____
- ☐ Used for onsite auxiliary fuel
- ☐ Sold
- ☐ Incinerated
- ☐ Other *(specify)*: _____

h. Provide the following design and operating parameters:

Parameter	Design Value	Operating Range
Feed temperature	°F	°F
Bottoms temperature	°F	°F
Overhead temperature	°F	°F
Column operating pressure	psig	psig
Reflux ratio	%	%
Steam requirement	lb/hr	lb/hr
Steam temperature	°F	°F
Steam pressure	psig	psig
Annual energy requirement	kWh	kWh

Treatment System Name _____

Steam Stripper ____ **of** ____

3-24. Steam Stripper (Continued)

STEAM STRIPPER

i. Indicate column type .....

- ☐ Packed
  - ☐ Pall rings
  - ☐ Rashing rings
  - ☐ Berl saddles
  - ☐ Intalox saddle
  - ☐ Other *(specify)*: _____
- ☐ Tray
  - ☐ Perforated sieve
  - ☐ Bubble cap
  - ☐ Valve
  - ☐ Other *(specify)*: _____
- ☐ Number of trays *(specify)*: _____

Treatment System Name _____

Tank Type: _____

Tank ____ **of** ____

CBI?
☐ Yes

3-25. Tanks (Aeration, Mix, Equalization, Holding, Neutralization)

Complete a copy of Question 3-25 for EACH type of tank or group of tanks in this *wastewater treatment* system that is not otherwise already described. Identify the type of tank and unit number in the upper right hand corner. If you have more than one unit for each type of tank, fill out a copy of this question for every unit under each type of tank.

TANKS (AERATION, MIX, EQUALIZATION, HOLDING, NEUTRALIZATION)

a. Provide the facility's name for the tank ..... _____

b. Provide the year of installation of the unit.... _____

c. Indicate the mode of operation for the tank .....
- ☐ ***Batch***
- ☐ Continuous

d. Provide the ***design capacity flow rate*** for the unit ..... _____ gal/min

e. Provide the average daily flow rate for the tank for 2006 ..... _____ gal/min

f. What is the target pH for the tank? ..... _____

g. What is this tank function?. .....
- ☐ Holding Tank
- ☐ Equalization Tank
- ☐ Neutralization Tank
- ☐ Aeration Tank
- ☐ Mix Tank

Treatment System Name _____

Other Wastewater Treatment Type: _____

Other Wastewater Treatment Unit ____ **of** ____

CBI?
☐ Yes

3-26. Treatment Unit, Other

Complete a copy of Question 3-26 for EACH additional *wastewater treatment* unit not listed in Question 3-16. Identify the unit number and unit number in the upper right hand corner.

OTHER _____

a. Provide the treatment unit name from the block diagram ..... _____

b. Provide the year of installation of the unit..... _____

c. Indicate the mode of operation for the unit ..... ☐ ***Batch***
☐ Continuous

d. Provide the unit capacity..... _____ gal

e. Provide the ***design capacity flow rate*** for the unit ..... _____ gal/min

f. Provide the unit's annual energy requirement and an indication of the type of data..... _____ kWh
☐ Manufacturer's Specification
☐ 2006 Energy Use

g. Provide the average daily flow rate for the unit for 2006..... _____ gal/min

h. What is the target temperature for this unit?..... _____ degrees Fahrenheit

i. What is the target pH for this unit? ..... _____

j. What is the purpose of this unit? ..... _____

k. Describe the mechanism of treatment..... _____

_____

_____

Copy ____ of ____

COMMENTS FOR SECTION 3: WASTEWATER TREATMENT AND CHARACTERIZATION

Cross reference your comments by question number and indicate the confidential status of your comment by checking (✓) the box in the column titled "CBI" (Confidential Business Information). If you need additional space, photocopy this page before writing on it, and number each copy in the space provided in the upper right corner.

Question Number	CBI?	Comment
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	

SECTION 4 – SAMPLING DATA

Section 4 requests sampling data for ***CCH manufacturing segments*** in-process streams and ***process wastewater*** streams. This information will be used to determine current effluent wastewater discharge characteristics, evaluate wastewater treatment performance, estimate pollutant discharge loadings, determine dioxin points of formation and concentration, and evaluate treatability of in-process and end-of-pipe wastewaters.

You are not required to perform non-routine tests or measurements solely for the purpose of responding to this questionnaire.

CBI?
☐ Yes

4-1. Please provide all data you have that meet the following criteria:

- All sampling data your site collected for any reason at any time for the list of selected parameters in Table 4-1 below.
- All sampling data your site collected for permit monitoring requirements in 2006 for the list of selected parameters in Table 4-2 below.
- All sampling data collected for reasons other than permit monitoring requirements in 2002, 2003, 2004, 2005 and 2006 for the list of selected parameters in Table 4-2 below.

Attach sampling data in either hard copy or electronic format. Provide daily values where available, not summary information (e.g. not monthly averages or daily maximums).

For **each** attached data set:

☐ Provide a description of the stream sampled (e.g., Oxychlorination Quench Blowdown or Activated Carbon Effluent) using the same terminology used in the block diagrams in Sections 2 and 3 of this questionnaire, if possible.

☐ Identify the manufacturing plant or wastewater treatment system where the sample point is located (e.g., EDC/VCM wastewater treatment). Please use the terminology used in Questions 1-7 and 3-1, if possible.

☐ Provide a unique sampling point identification number (e.g., SP-1)

☐ Provide the block diagram number that shows the sample point location**. Please mark the location of the sampling points on the diagrams you included in Sections 2 and 3.** You do not need to recreate the diagram. You may mark the location of the sampling point by hand.

☐ Indicate the date each sample was collected.

☐ Indicate the analyte(s) monitored from Table 4-1 and 4-2 and the analytical methods used.

☐ Provide the measured value. If non-detected, provide sample-specific detection limits, if available.

☐ Indicate whether the sample was a grab or composite sample.

☐ Provide the flow rate for the day the sample was collected.

☐ Indicate the percentage of sample point consisting of CCH manufacturing segments process wastewater.

☐ Indicate purpose of testing and whether analysis was completed at the facility or sent to a laboratory offsite.

☐ Indicate any assertion of a business confidentiality claim for the data. Note that effluent data cannot be covered by a claim of confidentiality.

CBI?
☐ Yes

4-2. Please provide a listing of all pollutants other than those listed in Tables 4-1 and 4-2, for which your facility analyzed using EPA-approved methods as described in 40 CFR Part 136 in 2006. Do not include sampling data your site collected for permit monitoring requirements.

Attach a listing of all sampling data in either hard copy or electronic format. **Provide only the analytes analyzed, not the measured value.**

For each attached listing:

☐ Provide a description of the stream sampled (e.g., Oxychlorination Quench Blowdown or Activated Carbon Effluent) using the same terminology used in the block diagrams in Sections 2 and 3 of this questionnaire, if possible.

☐ Identify the manufacturing plant or wastewater treatment system where the sample point is located (e.g., EDC/VCM wastewater treatment). Please use the terminology used in Questions 1-7 and 3-1, if possible.

☐ Provide a unique sampling point identification number (e.g., SP-1).

☐ Provide the block diagram number that shows the sample point location**. Please mark the location of the sampling points on the diagrams you included in Sections 2 and 3.** You do not need to recreate the diagram. You may mark the location of the sampling point by hand.

☐ Indicate the number of samples collected.

☐ Indicate the analyte(s) monitored and the analytical methods used.

☐ Indicate purpose of testing and whether analysis was completed at the facility or sent to a laboratory offsite.

☐ Indicate any assertion of a business confidentiality claim for the data. Note that effluent data cannot be covered by a claim of confidentiality.

Table 4-1: Pollutant Parameter Codes

Pollutant Parameter Code	Pollutant Parameter Name	CAS Number
P-1	2,3,7,8-tetrachlorodibenzo-p-dioxin	1746-01-6
P-2	1,2,3,7,8-pentachlorodibenzo-p-dioxin	40321-76-4
P-3	1,2,3,4,7,8-hexachlorodibenzo-p-dioxin	39227-28-6
P-4	1,2,3,6,7,8-hexachlorodibenzo-p-dioxin	57653-85-7
P-5	1,2,3,7,8,9-hexachlorodibenzo-p-dioxin	19408-74-3
P-6	1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin	35822-46-9
P-7	1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin	3268-87-9
P-8	2,3,7,8-tetrachlorodibenzofuran	51207-31-9
P-9	1,2,3,7,8-pentachlorodibenzofuran	57117-41-6
P-10	2,3,4,7,8-pentachlorodibenzofuran	57117-31-4
P-11	1,2,3,4,7,8-hexachlorodibenzofuran	70648-26-9
P-12	1,2,3,6,7,8-hexachlorodibenzofuran	57117-44-9
P-13	1,2,3,7,8,9-hexachlorodibenzofuran	72918-21-9
P-14	2,3,4,6,7,8-hexachlorodibenzofuran	60851-34-5
P-15	1,2,3,4,6,7,8-heptachlorodibenzofuran	67562-39-4
P-16	1,2,3,4,7,8,9-heptachlorodibenzofuran	55673-89-7
P-17	1,2,3,4,6,7,8,9-octachlorodibenzofuran	39001-02-0
P-18	3,3'4,4'-tetrachlrobiphenyl	32598-13-3
P-19	3,4,4',5-tetrachlorobiphenyl	70362-50-4
P-20	2,3,3'4,4'-pentachlorobiphenyl	32598-14-4
P-21	2,3,4,4',5-pentachlorobiphenyl	74472-37-0
P-22	2,3'4,4',5-pentachlorobiphenyl	31508-00-6
P-23	2',3,4,4',5-pentachlorobiphenyl	65510-44-3
P-24	3,3'4,4',5-pentachlorobiphenyl	57465-28-8
P-25	2,3,3',4,4',5-hexachlorobiphenyl	38380-08-4
P-26	2,3,3'4,4',5'-hexachlorobiphenyl	69782-90-7
P-27	2,3',4,4',5,5'-hexachlorobiphenyl	52663-72-6
P-28	3,3'4,4',5,5'-hexachlorobiphenyl	32774-16-6
P-29	2,3,3',4,4',5,5'-heptachlorobiphenyl	39635-31-9

Table 4-2: Pollutant Parameter Codes

Pollutant Parameter Code	Pollutant Parameter Name
P-30	Aluminum
P-31	Antimony
P-32	Arsenic
P-33	Boron
P-34	Chromium
P-35	Copper
P-36	Iron
P-37	Lead
P-38	Magnesium
P-39	Mercury
P-40	Molybdenum
P-41	Nickel
P-42	Thallium
P-43	Titanium
P-44	Vanadium
P-45	Zinc
P-46	Hexachlorobenzene
P-47	Hexachlorobutadiene
P-48	Vinyl Chloride

Copy ____ of ____

COMMENTS FOR SECTION 4: SAMPLING DATA

Cross reference your comments by question number and indicate the confidential status of your comment by checking (✓) the box in the column titled "CBI" (Confidential Business Information). If you need additional space, photocopy this page before writing on it, and number each copy in the space provided in the upper right corner.

Question Number	CBI?	Comment
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	

PART B: FINANCIAL AND ECONOMIC INFORMATION

One level of EPA's economic analysis will be a determination of the proposed standards' impacts on individual facilities. Using actual facility-specific financial information is the most accurate way to estimate these impacts. With this information, EPA's analysis can compare facility-specific costs of compliance with facility-specific financial data. For each proposed regulatory option under consideration, EPA can estimate the likelihood of any facility becoming unprofitable as a result of the rule and calculate the associated losses in services, revenue, and employment.

A second level in EPA's economic analysis is the evaluation of the impacts on the company from the costs associated with upgrading water pollution control for one or more facilities. For the company-level analysis, EPA generally uses standard financial analysis methods, such as discounted cash flow and weighted averages of financial ratios.

Finally, EPA must address the requirements in the Regulatory Flexibility Act (RFA) as amended by the Small Business Enforcement Flexibility Act (SBREFA). The Small Business Administration sets size standards on the basis of revenues or employment measured at the highest level of corporate ownership. Hence, if a corporate parent owns the company that owns a facility covered by this rulemaking, EPA requests information at the corporate parent level.

You may claim as confidential all information included in the response to a question by checking the Confidential Business Information (CBI) box next to the question number. Alternatively, for Part B only, you may claim all eligible information as confidential by checking the box below; in this case you do not need to check the CBI boxes next to the individual questions.

All eligible data in Part B are CBI ☐

GENERAL INSTRUCTIONS FOR PART B OF QUESTIONNAIRE

Read all question-specific instructions.

Mark responses for each question. Fill in the appropriate response(s) to each question. Please use **black ink** or **type** in the spaces provided. If the space allowed for the answer to any question is inadequate for your complete response, continue the response in the Comments area at the end of each section of the questionnaire, referencing the appropriate question number. If additional attachments are required to clarify a response, place the associated question number in the top right corner of each page of the attachments along with the EPA-designated facility ID number as shown on the cover of the questionnaire.

Answer all questions unless instructed otherwise. The purpose of this questionnaire is to gather all available information pertinent to the ***CCH manufacturing segments***. Report only whole numbers, unless instructed otherwise. If a question is not applicable to your ***facility***, write "NA". As noted throughout the questionnaire, you are requested to provide best financial estimates when data are not readily available. If you provide an estimate, note the methods that were used to make the estimates on the Comments page at the end of Part B. EPA does not intend for facilities to conduct detailed studies to make any estimates.

Pay close attention to the measurement units requested in each question. Report answers in the units that are specified.

Enter zero (0) where appropriate. Leave an entry blank only if instructed to do so (e.g., if the answer is zero, enter a zero (0)).

Indicate information that should be treated as confidential. You may claim as confidential all information included in the response to a question by checking the Confidential Business Information (CBI) box next to the question number. If all eligible data in Part B are confidential, you may check the box on page B-1. Note that you may be required to justify any claim of confidentiality at a later time. See the CONFIDENTIAL BUSINESS INFORMATION section on page iii.

Include financial statements. With your completed questionnaire include financial statements (i.e., balance sheet, income statement, and accompanying notes) for 2005 and 2006 for the company and corporate parent, should one exist. The statements need not be audited, but should conform to generally accepted accounting principles (GAAP). You may submit annual reports if they contain the relevant information.

Questions. If you have any questions about Part B, please telephone the Financial and Economic Information Helpline, operated by Eastern Research Group, Inc. (ERG), EPA's economics contractor, at _____, or e-mail the Financial and Economic Information Helpline at XXX@erg.com. The helpline is staffed Monday through Friday from 9:00 AM until 5:00 PM, Eastern Standard Time.

Retain a copy of the completed questionnaire for your records. EPA will review the information submitted and may request, if necessary, your cooperation in answering follow-up clarification questions to complete the data collection effort. Retain a copy of the completed questionnaire, including attachments, in case you (i.e., the contact identified in Question 1) are contacted to clarify your responses. Also, please maintain a record of sources used to complete the questions.

SECTION 1: OWNERSHIP INFORMATION

CBI? ☐ Yes **1.** Provide the following information for the primary contact for the information supplied in Part B (Financial and Economic Information) of this questionnaire:

_____ Primary Contact Name

(____) _____ Telephone Number

_____ Primary Contact Title

(____) _____ Facsimile Number

_____ E-mail Address

Convenient time to call between:
_____ ☐ am / ☐ pm and
_____ ☐ am / ☐ pm (Eastern Time)

_____ Street Address

_____ City _____ State _____ Zip Code

CBI? ☐ Yes **2.** What is the name and address of the company that owns this facility?

Name of Company _____

Mailing Address or P.O. Box _____

City _____ State _____ Zip Code _____

CBI? ☐ Yes **3.** Which of the following financial structures best describes this company?

a. ☐ C Corporation

b. ☐ S Corporation/Limited Liability Corporation

c. ☐ Limited Partnership

d. ☐ General Partnership

e. ☐ Sole Proprietorship

f. ☐ Joint Venture

g. ☐ Other: Please describe _____

CBI? ☐ Yes **4.** Is the company listed in Question 2?

a. ☐ Publicly held

b. ☐ Privately held

CBI? ☐ Yes **5.** If the company is a joint venture, list the names of the companies involved.

a. ☐ Not a joint entity

b. Name of Company _____

c. Mailing Address of P.O. Box _____

d. City _____ State _____ Zip Code _____

e. Name of Company _____

f. Mailing Address of P.O. Box _____

g. City _____ State _____ Zip Code _____

h. Name of Company _____

i. Mailing Address of P.O. Box _____

j. City _____ State _____ Zip Code _____

CBI? ☐ Yes **6.** What is the name of the Corporate Parent that owns or controls the company listed in Question 2?

a. ☐ No Corporate Parent

b. Name of Corporate Parent _____

c. Mailing Address or P.O. Box _____

d. City _____ State _____ Zip Code _____

CBI? ☐ Yes **7.** Please check the corporation type that best describes the Corporate Parent listed in Question 6.

a. ☐ No Corporate Parent

b. ☐ C Corporation

c. ☐ S Corporation/Limited Liability Corporation

d. ☐ Limited Partnership

e. ☐ General Partnership

f. ☐ Sole Proprietor

g. ☐ Other: please describe _____

CBI? ☐ Yes

8. Is the Corporate Parent listed in Question 5?

a. ☐ No Corporate Parent

b. ☐ Publicly held

c. ☐ Privately held

SECTION 2: FACILITY AND COMPANY INFORMATION

CBI? ☐ Yes

9. If this company borrows money to finance capital improvements, what interest rate would it pay on such loans? (Enter "NA" if money is not borrowed.)

Interest Rate..... _____ _____ . _____%

CBI? ☐ Yes

10. If this company finances capital improvement through equity, what equity rate would it use? The equity rate is the minimum return on capital required to compensate equity owners for bearing risk. (Enter "NA" if stock is not used to raise capital).

Equity Rate..... _____ _____ . _____%

CBI? ☐ Yes

11. If this company finances capital improvement through bonds, what bond rate would it use? The bond rate is the minimum return on capital required to compensate bond holders for bearing risk. (Enter "NA" if bonds are not used to raise capital).

Bond Rate ..... _____ _____ . _____%

CBI? ☐ Yes

12. When you finance capital improvements, what is the approximate mix of interest, equity and bonds that you would expect to use?

a. Interest (Question 9) ..... _____ _____ . _____%

b. Equity (Question 10) ..... _____ _____ . _____%

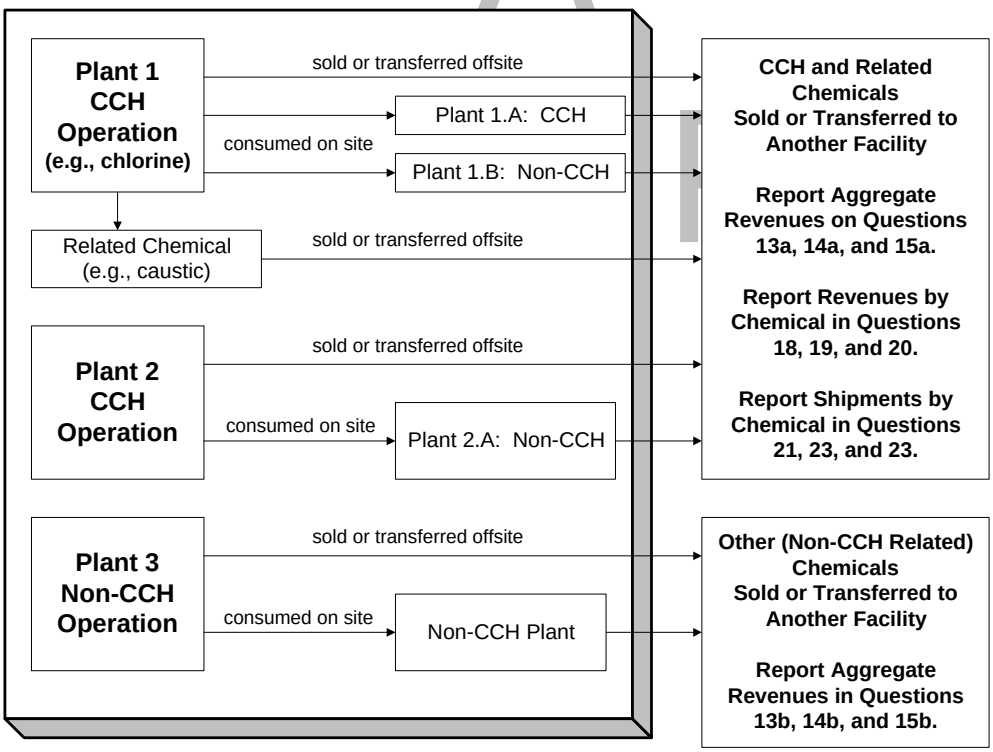
c. Bonds (Question 11) ..... _____ _____ . _____%

The first level in EPA's economic analysis is an investigation of the proposed standards' impact on a ***facility***. In order to do this, EPA needs to collect information for all products that are sold or transferred from the facility that could be affected by costs for incremental pollution controls for the ***CCH manufacturing segments***, even if the product that is sold or transferred is a chemical that is not included in the ***CCH manufacturing segments***.

In the example below, a ***facility*** has three ***plants***. Plant 1 produces chlorine, some of which is sold and the rest of which is consumed on site in the manufacture of other chemicals. The chlorine process also produces caustic which is sold. The chlorine is consumed by two plants; Plant 1.A is a ***CCH manufacturing plant*** and Plant 1.B does not. Because the operations at both Plants 1.A and 1.B would be affected by any change to Plant 1, the revenues potentially affected by the CCH regulation include the caustic, chlorine, Plant 1.A, and Plant 1.B production. In Questions 13–15 and 18-23, these are called "CCH and Related Chemicals." CCH and related chemical revenues are reported in the aggregate in Questions 13a, 14a, and 15a and by chemical in Questions 18-20.

Plant 2 is a ***CCH manufacturing plant***. Some of the chemical is sold and the rest is consumed in the manufacture of other chemicals. Plant 2.A is not a ***CCH manufacturing plant*** (for example, an isocyanate plant). Because the isocyanate manufacturing would be affected by changes to Plant 2, the isocyanate is considered a CCH-related chemical and isocyanate revenues are included in the aggregate revenues reported in Questions 13a, 14a, and 15a and listed as a chemical in Questions 18-20.

Plant 3 is not a ***CCH manufacturing plant*** but is located in the same facility as Plants 1 and 2. Production from Plant 3 and the plants that use its output as a manufacturing input is considered "Other (non-CCH Related) Production." Revenue data for Other (non-CCH Related Chemicals) is collected in the aggregate in Questions 13b, 14b, and 15b only. The information is needed to create as complete an income statement for the facility as possible.



Facility

CBI?
☐ Yes

13. For fiscal year 2004, complete the following income statement information. Report amounts in dollars; round to the nearest thousand. If the facility is the company, complete both columns with the same entries. If certain items are not held on the facility's books, enter zero for the item under the facility column.

	Facility	Company
REVENUES		
a. Net sales of CCH and related chemicals	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
b. Net sales from other (non-CCH related) chemicals	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
c. Other income (such as equity earnings and interest)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
d. Total revenues (sum of a through c)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
COST AND EXPENSES		
e. Cost of goods sold (purchases and operating expenses; do not include depreciation and amortization)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
f. Depreciation and amortization	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
g. Selling, general, and administrative expenses	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
h. Total costs and expenses (sum of e through g)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
i. EARNING BEFORE INTEREST AND TAXES (EBIT) (subtract h from d)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
j. INTEREST EXPENSE	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
k. TAXES	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
l. NET INCOME (subtract j and k from i)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0

CBI?
☐ Yes

14. For fiscal year 2005, complete the following income statement information. Report amounts in dollars; round to the nearest thousand. If the facility is the company, complete both columns with the same entries. If certain items are not held on the facility's books, enter zero for the item under the facility column.

	Facility	Company
REVENUES		
a. Net sales of CCH and related chemicals	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
b. Net sales from other (non-CCH related) chemicals	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
c. Other income (such as equity earnings and interest)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
d. Total revenues (sum of a through c)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
COST AND EXPENSES		
e. Cost of goods sold (purchases and operating expenses; do not include depreciation and amortization)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
f. Depreciation and amortization	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
g. Selling, general, and administrative expenses	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
h. Total costs and expenses (sum of e through g)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
i. EARNING BEFORE INTEREST AND TAXES (EBIT) (subtract h from d)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
j. INTEREST EXPENSE	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
k. TAXES	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
l. NET INCOME (subtract j and k from i)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0

CBI?
☐ Yes

15. For fiscal year 2006, complete the following income statement information. Report amounts in dollars; round to the nearest thousand. If the facility is the company, complete both columns with the same entries. If certain items are not held on the facility's books, enter zero for the item under the facility column.

	Facility	Company
REVENUES		
a. Net sales of CCH and related chemicals	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
b. Net sales from other (non-CCH related) chemicals	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
c. Other income (such as equity earnings and interest)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
d. Total revenues (sum of a through c)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
COST AND EXPENSES		
e. Cost of goods sold (purchases and operating expenses; do not include depreciation and amortization)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
f. Depreciation and amortization	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
g. Selling, general, and administrative expenses	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
h. Total costs and expenses (sum of e through g)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
i. EARNING BEFORE INTEREST AND TAXES (EBIT) (subtract h from d)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
j. INTEREST EXPENSE	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
k. TAXES	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
l. NET INCOME (subtract j and k from i)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0

CBI?
☐ Yes

16. For fiscal year 2005, complete the following balance sheet information. Report amounts in dollars; round to the nearest thousand. If the facility is the company, complete both columns with the same entries. If certain items are not held on the facility's books, enter zero for the item under the facility column.

	Facility	Company
ASSETS		
a. Current assets, excluding inventories	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
b. Inventories	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
c. Land (original cost)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
d. Buildings (original cost)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
e. Equipment (original cost)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
f. Other noncurrent assets (original cost)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
g. Cumulative depreciation	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
h. Total assets (sum of a through f minus g)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
LIABILITIES AND EQUITY		
i. Current liabilities (including accounts payable, accrued expenses and taxes, and the current portion of long-term debt)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
j. Long-term debt (including bonds, debentures, long-term leases, bank debt, and all other noncurrent liabilities such as deferred income taxes)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
k. Retained earnings	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
l. Owner equity (other than retained earnings	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
m. Total liabilities and equity (sum of i through l)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0

CBI?
☐ Yes

17. For fiscal year 2006, complete the following balance sheet information. Report amounts in dollars; round to the nearest thousand. If the facility is the company, complete both columns with the same entries. If certain items are not held on the facility's books, enter zero for the item under the facility column.

	Facility	Company
ASSETS		
a. Current assets, excluding inventories	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
b. Inventories	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
c. Land (original cost)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
d. Buildings (original cost)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
e. Equipment (original cost)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
f. Other noncurrent assets (original cost)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
g. Cumulative depreciation	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
h. Total assets (sum of a through f minus g)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
LIABILITIES AND EQUITY		
i. Current liabilities (including accounts payable, accrued expenses and taxes, and the current portion of long-term debt)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
j. Long-term debt (including bonds, debentures, long-term leases, bank debt, and all other noncurrent liabilities such as deferred income taxes)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
k. Retained earnings	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
l. Owner equity (other than retained earnings	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
m. Total liabilities and equity (sum of i through l)	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0

The following set of questions requests detailed information on facility shipments, intra-company transfers, domestic sales, and exports.

CBI?
☐ Yes

18. What were the total values of CCH and related chemicals sold or shipped offsite from this facility in 2004?

Name of CCH or Related Chemical	Value			
	Transferred to Other Facilities Under the Same Ownership	**Sold Domestically to Other Companies**	**Exported**	**2004 Total**
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
Total	**Should match entry in Question 13a for the facility.**			$__ __ __,__ __ __,0 0 0

CBI?
☐ Yes

19. What were the total values of CCH and related chemicals sold or shipped offsite from this facility in 2005?

Name of CCH or Related Chemical	Value			
	Transferred to Other Facilities Under the Same Ownership	Sold Domestically to Other Companies	Exported	2005 Total
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
Total	**Should match entry in Question 14a for the facility.**			$__ __ __,__ __ __,0 0 0

CBI?
☐ Yes

20. What were the total values of CCH and related chemicals sold or shipped offsite from this facility in 2006?

Name of CCH or Related Chemical	Value			
	Transferred to Other Facilities Under the Same Ownership	Sold Domestically to Other Companies	Exported	2006 Total
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0	$__ __ __,__ __ __,0 0 0
Total	**Should match entry in Question 15a for the facility.**			$__ __ __,__ __ __,0 0 0

CBI?
☐ Yes

21. What were the total shipments of CCH and related chemicals sold or shipped offsite from this facility in 2004?

Name of CCH or Related Chemical	**Shipments (Tons)**			
	Transferred to Other Facilities Under the Same Ownership	**Sold Domestically to Other Companies**	**Exported**	**2004 Total**
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
			Total	__ __ __,__ __ __,0 0 0

CBI?
☐ Yes

22. What were the total shipments of CCH and related chemicals sold or shipped offsite from this facility in 2005?

Name of CCH or Related Chemical	**Shipments (Tons)**			
	Transferred to Other Facilities Under the Same Ownership	**Sold Domestically to Other Companies**	**Exported**	**2005 Total**
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
			Total	__ __ __,__ __ __,0 0 0

CBI?
☐ Yes

23. What were the total shipments of CCH and related chemicals sold or shipped offsite from this facility in 2006?

Name of CCH or Related Chemical	Shipments (Tons)			
	Transferred to Other Facilities Under the Same Ownership	**Sold Domestically to Other Companies**	**Exported**	**2006 Total**
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0	__ __ __,__ __ __,0 0 0
			Total	__ __ __,__ __ __,0 0 0

CBI? ☐ Yes **24.** How was the transfer price determined for shipments to other facilities under the same ownership? (Check one.)

a. ☐ No intra company transfers

b. ☐ Market Price

c. ☐ Production cost

d. ☐ Other *(specify)*: _____

CBI? ☐ Yes **25.** For fiscal year 2006, list the average number of full-time equivalent employees at the facility and company.

a. Facility ..... __,__ __ __

b. Company ..... __ __, __ __ __

CBI? ☐ Yes **26.** Include a copy of the company's end-of-year financial statements for 2005 and 2006 with the completed questionnaire. These may be accountant reports, annual reports, and/or 10-K forms, and **MUST** include both an income statement and balance sheets for the company. These statements need not be audited, but should conform to generally accepted accounting principles (GAAP). In all cases, **INCLUDE THE NOTES TO THE FINANCIAL STATEMENTS**. You may claim the information as confidential by marking the document(s) with the word "Confidential".

SECTION 3: CORPORATE PARENT FINANCIAL INFORMATION

CBI? ☐ Yes **27.** Is there a corporate parent for the company that owns the facility?

☐ Yes
☐ No – If no, you have completed questionnaire.

CBI? ☐ Yes **28.** For fiscal year 2006, list the average number of employees at the corporate parent (including all subsidiaries and divisions).

Number of employees at the corporate parent ..... ___ ___ ___, ___ ___ ___

CBI? ☐ Yes **29.** Include a copy of the corporate parent's end-of-year financial statements for 2005 and 2006 with the completed questionnaire. These may be accountant reports, annual reports, and/or 10-K forms, and MUST include notes to the financial statements, income statement, and balance sheet. These statements need not be audited but should conform to generally accepted accounting principles (GAAP). You may claim the information as confidential by marking the document(s) with the word "Confidential."

Copy ____ of ____

Comments for Part B (Financial and Economic Information)

Please cross-reference your comments by question number and indicate if your comment is confidential by checking "yes" in the column titled "CBI" (Confidential Business Information). **If you need additional space, please photocopy this page before writing on it, and number each copy in the space provided in the top right-hand corner.**

Question Number	CBI?	Comment
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	
	☐ Yes	