



2006 Inventory Update Reporting: Data Summary

The U.S. Environmental Protection Agency (EPA) is presenting for the first time a report on the 2006 collection of chemical data under the Toxic Substances Control Act (TSCA) Inventory Update Reporting (IUR) rule. The IUR is a periodic regulatory collection of specific information on chemical substances listed on the TSCA Inventory. This document provides a summary of the chemical manufacturing, processing, and use information, as reported for calendar year 2005.



Overview—Read about why EPA produced this report for the first time and the summary of what was collected in 2006.



Introduction—Find out more about the TSCA Chemical Substance Inventory, the Inventory Update Reporting program, and the release of the 2006 IUR database.



Use of the IUR Data—Learn about EPA's current use of the 2006 IUR data and the factors and assumptions to consider when using the data.



Data Analysis and Key Findings—This section provides a summary of specific information reported under the 2006 IUR. It presents key findings from the data, including detailed analyses with supporting tables and graphs.



Next Steps—Find out about EPA's plans for future IUR data releases and for the 2011 IUR collection.



Overview

The *2006 Inventory Update Reporting: Data Summary* is an overview of the chemical manufacturing, processing, and use information collected in 2006 under the Inventory Update Reporting (IUR) rule. Manufacturers and importers¹ provided information on the chemical substances they manufactured in or imported into the United States in amounts of at least 25,000 pounds at a site during the 2005 calendar year.

This report provides an overview of the 2006 IUR data and includes summary information and supporting tables and figures developed from the data². A non-confidential collection of the 2006 IUR data is available on the IUR Web site (www.epa.gov/iur). The Web site also includes non-confidential production volume and company identity data collected during previous reporting cycles.

The 2006 collection represents the first time that the U.S. Environmental Protection Agency (EPA) collected information on the processing and use of organic chemical substances. This reporting was in addition to the production volume information collected in previous reporting cycles. This collection also marks the first time that manufacturers were required to report manufacturing information on inorganic, as well as organic, chemical substances. Exhibit 1 presents an overview of the 2006 IUR collection.

In 2006, a total of 3,827 sites³, representing 1,541 companies, reported information on 6,200 chemicals. More than 95 percent of the total production

Examples of Reported Uses:

- Formulating chemicals into inks
- Incorporating chemicals into children's toys
- Using chemicals as intermediates

volume reported is manufactured in the United States. For organic chemicals manufactured in quantities of 300,000 pounds or greater at a given site, submitters also reported downstream uses. These submitters reported nearly 1 trillion pounds of organic chemicals. The 2006 IUR data contained industrial processing and use information that accounted for 72 percent and commercial and consumer use information that accounted for 22 percent of the nearly 1 trillion pounds.

¹ The IUR rule follows the Toxic Substances Control Act (TSCA) definition of "manufacture" which means to manufacture, produce, or import for commercial purposes. Throughout the rest of this report, the term "manufacture" will include import (and "manufacturer" will include importer). The term "domestically manufactured" will exclude imported volumes.

² This summary is based on version 1 of the 2006 IUR database. This version excludes approximately five percent of the number of chemicals submitted due to significant problems with the chemical identifications.

³ For the purposes of IUR, EPA defines a "site" as the physical location where a chemical substance is manufactured, processed, or used or the physical location (including a business office) that controls the chemical's import.

Exhibit 1. 2006 IUR Data Overview

IUR Submissions*	4,107
Companies Reporting	1,541
Sites Reporting*	3,827
Unique Chemicals Reported	6,200
Chemicals Reported as Domestically Manufactured**	4,834
Chemicals Reported as Imported**	3,162
Total Reported Domestically Manufactured Production Volume (billion lb)	26,086
Total Reported Imported Production Volume (billion lb)	833
Total Reported Production Volume (billion lb)	26,919
Organic Chemicals Reported	5,546
Chemicals with Reported Process/Use Information	2,993
% Production Volume with Reported Process/Use Information***	72
Chemicals with Reported Commercial/Consumer Use Information	2,118
% Production Volume with Reported Commercial/Consumer Use Information***	22
Inorganic Chemicals Reported	654

* Under IUR, companies submit a Form U reporting all subject chemicals manufactured on a site-specific basis. Some companies submitted multiple Form U's for each site; therefore, the number of submissions is greater than the number of sites.

** The counts for "Chemicals Reported as Domestically Manufactured" and "Chemicals Reported as Imported" also include any chemicals that report both domestic manufacturing and importing activities; therefore, adding these rows results in more than 6,200 chemicals.

*** Partially exempt petroleum process streams accounted for seven percent of the reported organic chemicals. Because reporting of processing and use information was not required for partially exempt chemicals, they were excluded from these calculations. Note that although inorganic chemicals were also partially exempt, EPA did receive some processing and use information for those chemicals; the associated inorganic production volume was not included in these calculations, which pertain to organic chemicals only.



Introduction

What is Inventory Update Reporting?

Inventory Update Reporting (IUR) is a periodic collection of information on the chemical substances currently in commerce. Manufacturers are required to submit information on the chemical substances that they domestically manufactured or imported into the United States and that meet certain reporting requirements, which are described in this chapter.

Why is IUR Information Collected?

The Toxic Substances Control Act (TSCA) Section 8(a) authorizes EPA to collect certain information on chemical substances manufactured or processed in the United States. In 1977, EPA promulgated a rule under TSCA Section 8(a) to compile an inventory of all chemical substances in commerce in the United States. This inventory is called the TSCA Chemical Substance Inventory, or the TSCA Inventory; it lists chemical substances that have been domestically manufactured and imported for commercial purposes into the United States. Through the IUR, the Agency obtains a periodic collection of information on the more than 83,000 chemical substances currently listed on the TSCA Inventory.

Chemical substances are added to the TSCA Inventory after a manufacturer has submitted a Premanufacture Notification (PMN), satisfied the requirements of TSCA Section 5, and filed a Notice of Commencement (NOC).⁴ Chemical substances not on the TSCA Inventory can only be manufactured, processed, or used for a commercial purpose in the United States if the chemical substances are exempt or otherwise excluded from the PMN requirements.

Definition: Chemical Substance

TSCA defines the term **chemical substance** as any organic or inorganic substance of a particular molecular identity, including: (i) any combination of such substances occurring in whole or in part as a result of a chemical reaction or occurring in nature, and (ii) any element or uncombined radical.

The TSCA Chemical Substance Inventory includes only those chemicals that meet the TSCA definition of a “chemical substance”; chemicals used solely for certain applications, such as cosmetics, drugs, or pesticides, are excluded from the definition of a chemical substance. Dual-use chemicals, or chemicals that have both a TSCA and a non-TSCA use, may be included on the TSCA Inventory for their TSCA use. For more information on the TSCA Inventory, visit EPA’s New Chemicals Program Web site (www.epa.gov/oppt/newchems).

What is the History of IUR?

EPA implemented the IUR program following the promulgation of the first IUR regulation in 1986. The first IUR information collection required

⁴ For additional information on the Premanufacture Notification process and other aspects of the New Chemicals Program, please visit www.epa.gov/oppt/newchems.

manufacturers to report basic manufacturing data, including the specific chemical identity, production volume, and site-limited status for organic chemical substances listed on the TSCA Inventory and produced in the amount of 10,000 pounds or more, at a single site, during 1985. Collected every four years, EPA uses this information to support activities associated with implementing TSCA.

Definition: Site-Limited

A **site-limited** chemical is manufactured and consumed at a given site and is not distributed in its pure or impure form or in any mixture or article outside the site for commercial purposes. Note that imported chemical substances cannot be site-limited.

EPA amended the IUR regulation in 2003 to tailor the chemical substance reporting requirements to more closely match current information needs, which included obtaining new and updated information and improving the utility of the information reported. Under the amended IUR requirements, manufacturers producing 25,000 pounds or more of a reportable chemical substance, at a site, must report its specific chemical identity and related manufacturing information. If a manufacturer produces 300,000 pounds or more of the chemical substance at a site, they must also report processing and use information. Exhibit 2 contains a brief list of the new exposure-related reporting elements.

While the early IUR collections were limited to the collection of information on organic chemical substances, the 2003 amendments expanded the collection to include information on inorganic chemical substances. The changes to the reporting threshold were done, in part, in recognition of the increased burden associated with these new reporting requirements. EPA also reduced the reporting frequency from every four years to every five years, and limited

Exhibit 2. New Exposure-Related Data Elements in the 2006 IUR

- **Physical form(s)** of the reportable chemical as it leaves each site and the associated percentage of production volume.
- **Maximum concentration**, measured by percentage of weight, of each reportable chemical at the time it leaves each site and for each reported commercial and consumer use.
- **Total number of workers** reasonably likely to be exposed to the reportable chemical at the site of domestic manufacture or import and for each industrial processing or use activity.
- **Number of industrial sites** that process or use the chemical.
- **Industrial processing or use operation(s)** at sites that receives the reportable chemical from the submitter site directly or indirectly.
- **Commercial and consumer product category or categories** that best describe the commercial and consumer products in which the reportable chemical is used.
- **Percentage total production volume** of the reportable chemical that is associated with each process or use.
- **Indication of whether reportable chemical substances are present in products intended for use by children** up to the age of 14.

the reporting of processing and use information to data covering U.S. uses only.

What Information Did EPA Collect for 2006 IUR Reporting?

The 2006 information collection was the first reporting cycle to incorporate the amendments into the reporting requirements. Information covering calendar year 2005 was collected during the 2006 submission period, from August 25, 2006 to March 23, 2007, on 6,200 chemical substances.

EPA collected information from sites that manufacture TSCA Inventory-listed chemicals in quantities of 25,000 pounds or more at a given site. Each site submitted an IUR report for all subject chemicals manufactured by that site during 2005.

A site's IUR submission consists of manufacturing, processing, and use information for every chemical manufactured at the site that meets the reporting requirements. A submission typically contains reports for multiple chemicals.

EPA required all reporting sites to submit the following manufacturing information for each reportable chemical substance:

- Parent company and site identification
- Specific chemical name
- Chemical Abstracts Service (CAS) Registry Number (or other identifying number)
- Domestically manufactured production volume
- Imported production volume
- Site-limited status
- Maximum concentration
- Number of workers reasonably likely to be exposed during the manufacture of the chemical substance
- Physical form and the percentage of the chemical substance in each physical form

In addition to the above information, if the site manufactured organic chemical substances in volumes that exceeded the 300,000 pound threshold, then they were required to submit information on industrial processing and use and on commercial and consumer uses for those chemical substances. Manufacturers submitted information on uses at their own site and at other locations that process and use these chemical substances.

Industrial processing and use information includes the following:

- Unique combinations of:
 - Type of process or use
 - Industrial sector of use
 - Function of the chemical

- For each unique combination:
 - Number of sites associated with each industrial processing or use activity
 - Number of workers reasonably likely to be exposed to the chemical substance during each processing or use activity
 - Percent of the total production volume associated with each processing or use activity

Commercial and consumer use information includes the following:

- Category of products in which the chemical was used
- Maximum concentration of the chemical in each product category
- Percent of the total production volume associated with each product category
- Use of the chemical in products intended for children up to 14 years of age

EPA Encouraged Electronic Reporting

EPA made electronic reporting software available to all submitters for the 2006 reporting cycle. Downloadable from EPA's Web site, the software enabled submitters to develop a validated, correctly formatted, and encrypted data file containing their IUR submission. The data file could be printed and submitted to EPA, saved and submitted on magnetic media, or submitted over the Internet through the Agency's Central Data Exchange (CDX)⁵. Full use of the reporting software, including the validation process, improved the accuracy of the submitted IUR Form U data. Submission of the encrypted file enabled EPA to directly load data into the database, thereby further improving the accuracy of the data by avoiding scanning-related errors.

EPA anticipated that electronic IUR submissions would result in a fast turnaround time between the submission of the data to the Agency and the

⁵ Central Data Exchange (CDX) serves as EPA's point of exchange on the Environmental Information Exchange Network. To learn more about CDX, visit http://cdx.epa.gov/epa_home.asp

availability of the data for use, and more than half of all reports were, in fact, submitted this way. EPA worked diligently to ensure that the database was accurate and would provide the public with the most useful information. However, availability of the data for public use has not happened quickly as a result of many issues stemming primarily from non-electronic submissions.

Preparing the 2006 IUR database for this data summary has taken longer than expected. The delay resulted from a combination of events associated with the time and resources needed to review and correct submitter- and scanning-related errors from the non-electronic reports. EPA detected significant errors on a substantial number of reporting forms. Oftentimes, the submitted data did not conform to the reporting requirements of the IUR rule. The Agency also faced difficulties resolving issues pertaining to submissions with incorrect chemical identification information. Based on this experience, and as discussed in *Next Steps*, EPA is considering steps to improve company reporting and EPA processing of the IUR information submitted in the next (2011) reporting cycle.

What is the 2006 IUR Public Database?

The 2006 IUR public database is a collection of non-confidential information on 6,200 chemicals domestically manufactured in or imported into the United States and includes processing and use information on more than 3,000 of those chemical substances. Released in conjunction with this report for use by the general public, EPA developed the public database from an internal database comprised of the 2006 IUR submitted information. In order to provide the public with the most comprehensive data, EPA has provided much of the

information as aggregated, national numbers in ranges. This allows the public to view information based on both the confidential and non-confidential data.

Manufacturing, processing, and use data, compiled into a searchable database format, enables EPA and others to more readily screen chemical substances for potential exposure and risk. The IUR provides updated data for a set of chemicals on the TSCA Inventory and is used in many of EPA's Office of Pollution Prevention and Toxic's (OPPT's) programs. The addition of the manufacturing, processing, and use data elements greatly enhances the utility of the IUR data for the Agency and the public alike.

How Can I Access the IUR Public Data?

The 2006 IUR public data are available on the IUR Web site (www.epa.gov/iur). You can download the full public database or you can search the database by chemical name, CAS Registry Number, or company name. The resulting searches provide chemical-specific, nationally aggregated information on manufacturing, processing, and use of the chemical substance and company-specific non-confidential site and chemical information.

The IUR Web site also includes public information from previous IUR collections. National production volumes reported for 1986 through 2002 submission periods can be searched by chemical name or CAS Registry Number. In addition, information from the 1998 and 2002 collections can be searched by chemical name, CAS Registry Number, or company name.



Use of the IUR Data

The IUR represents the most comprehensive source of basic screening-level, exposure-related information available, and as such, the IUR data are of value in supporting risk screening, priority setting, and management activities. The availability of IUR data will be helpful as government, industry, and the public work together to identify, develop, and implement programs to minimize the potential environmental and human health risks from chemical substances of concern.

EPA's Current Use of the 2006 IUR Data

EPA's expansion of the IUR data collected in the 2006 reporting cycle provides users with additional information on chemical substances on the TSCA Inventory. The additional manufacturing data and industrial processing and use data provide EPA with information on potential worker exposures to chemical substances as well as, in some cases, potential environmental releases during manufacturing, processing, and use. Commercial and consumer use data reported in the IUR provide an indication of potential exposures during use in a commercial setting and by consumers. Other EPA offices and government agencies that have used the basic manufacturing information from previous collections are expected to similarly use these new IUR data to identify potential use scenarios that may lead to exposure.

Data generated by the IUR are used in a wide variety of programs fundamental to fulfilling EPA's TSCA responsibilities. Historically, EPA has used the IUR data to support several programs that utilize information on the production volumes of chemical substances, such as EPA's High Production Volume (HPV) Challenge Program⁶ and the development of rules requiring testing of chemical

substances. The Agency's primary use of the data from the expanded reporting in the 2006 IUR cycle is to prioritize TSCA chemical substances for more detailed information gathering, risk screening and risk management to protect human health and the environment. Uses of the 2006 data by EPA are discussed in the following sections.

The Security and Prosperity Partnership of North America (SPP)

The Security and Prosperity Partnership of North America (SPP) program is a collaboration among the United States, Canada, and Mexico, which includes efforts to ensure the safe manufacture and use of industrial chemical substances in North America. Each country shares scientific information, technical understanding, best practices, and risk management approaches. In addition, the countries coordinate research on new approaches to chemical testing and assessment. This partnership, launched in August 2007, commits the three countries to accelerating and improving the effectiveness of actions to safeguard human health and the environment, providing cost-effective solutions for risk management for businesses and governments, and strengthening regulatory authority.

⁶ EPA, Environmental Defense, American Petroleum Institute, and American Chemistry Council joined forces to launch the voluntary HPV Challenge Program in 1998 to collect basic hazard data for HPV chemicals. HPV chemicals are classified as those chemicals manufactured in or imported into the United States in national quantities of 1 million pounds or more per year. Additional information is available on the HPV Challenge Web site (www.epa.gov/chemrtk).

The Chemical Assessment and Management Program (ChAMP)

EPA initiated the Chemical Assessment and Management Program (ChAMP) to fulfill commitments made under the SPP. Under ChAMP, EPA is using IUR data, in conjunction with other data, to prioritize chemical substances for future work. The prioritization is based on information concerning a chemical substance's potential hazards and on the potential exposure of workers, consumers (especially children), the environment, and the general population.

In 2008, as part of the SPP commitments, EPA began posting screening-level risk-based prioritization (RBP) documents on EPA's Web site. The RBPs summarize basic hazard and exposure information on EPA's HPV Challenge Program chemical substances. RBP documents also identify potential risks, note scientific issues and uncertainties, and indicate the initial priority assigned by the Agency for potential future appropriate action. The 2006 IUR data are essential to the development of these RBP documents, providing the screening-level exposure-related information necessary for the initial priority determination. In addition, EPA began developing initial evaluations of Moderate Production Volume (MPV) chemicals. The evaluation of the first set of these chemical substances consists of development of a hazard characterization and hazard-based prioritization.

Out of the 6,716 chemical substances currently on the ChAMP list, 6,138 reported information for this past reporting cycle. Of these ChAMP chemicals, submitters provided information on 2,889 HPV chemicals and 3,249 MPV chemicals under the 2006 IUR.

EPA also recently announced its intention to implement two additional activities: the Inventory Reset Program and the Inorganics HPV Challenge Program. The Reset Program, discussed further in *Next Steps*, will reset the TSCA Inventory to more

accurately reflect the chemicals currently in commerce. The Inorganics HPV Challenge Program is a data collection and characterization program for inorganic chemicals that will parallel efforts with the HPV Challenge Program, which currently only includes organic chemicals.

Additional details can be found on the ChAMP Web site (www.epa.gov/champ).

Other EPA Uses

Examples of other ways EPA uses IUR information include:

- Providing a preliminary characterization of the potential exposure to a chemical substance from information collected on manufacture, processing, and use of chemical substances.
- Supporting regulatory initiatives to require testing and/or submission of information about selected chemical substances.
- Identifying manufacturers of chemical substances in the event of a need for rapid risk management response to a concern about a chemical substance.
- Assisting in the design and implementation of cooperative programs with the chemical industry and the public such as the Voluntary Children's Chemical Evaluation Program (VCCEP) and the Design for the Environment Program (DfE).

The Agency anticipates that, as was true even for the basic production data reported under previous collections, new uses of current IUR data by EPA and by others will continue to emerge.

The Public's Use of the IUR Data

The 2006 IUR public database provides the public, government officials, non-governmental organizations, and industry with access to non-confidential information on the manufacture, processing, and use of chemical substances in commerce on a regional and national level. The public database can be searched by chemical identity to retrieve chemical-specific manufacturing, processing, and use information or by company name to retrieve the list of chemicals reported by the sites associated with the subject company.

What Should I Consider When Using the IUR Public Database?

IUR reporting is triggered by the production volume of the chemical substance manufactured, rather than the actual hazards or potential exposures associated with a chemical substance. You should consider this aspect of the data when using the public IUR database. In addition, while the IUR provides comprehensive reporting from all subject companies, the required data are limited and were intended to be used only for screening-level purposes. For this reason, the use of the IUR data alone is not sufficient to determine potential exposures or to calculate potential risks to human health and the environment, even at the screening level. IUR data, in conjunction with other information, such as the toxicity of the chemical, potential releases, and site-specific conditions, can be used as a starting point in prioritizing and screening chemicals for potential risks to humans and the environment.

The public should also consider several characteristics of IUR information when using the data, as follows:

- **Confidential Business Information Claims**—IUR data can be designated as confidential business information (CBI) by the submitter. EPA has protected confidential information when ag-

Definition:

Confidential Business Information

Confidential Business Information (CBI), in the IUR context, is commercial information obtained from the information owner, or person, and claimed as confidential, that is treated as confidential by that person, has not been previously disclosed, is not available from other sources and is not required by law to be disclosed. Additionally the person asserting the CBI claim must believe that the release of the information claimed as CBI would cause substantial injury to the person's competitive position. For further information see the IUR Web site (www.epa.gov/iur).

gregating IUR data for use in public documents, including in this report. Public versions of the IUR database present data that were either not claimed as CBI or that have been aggregated to protect confidential information.

Exhibit 3 provides statistics on the percentage of IUR data elements that were claimed confidential.

When using data in this report or on the IUR Web site, users do not have access to the complete IUR data set and should draw conclusions from the available data with care.

Exhibit 3. CBI Claims for Specific IUR Data Elements

Data Element	Percentage of Time Data Element Claimed Confidential
Manufacturing Information	
Domestic Manufacture Production Volume	32%
Import Production Volume	20%
Site-Limited Status	13%
Physical Form*	13%
Processing and Use Information	
Industrial Processing and Use Information (overall) **	28%
Industrial Processing and Use Information (3-Code Combination) ***	49%
Process Use Code	26%
5-digit NAICS Code	29%
Industrial Function Category	27%
Commercial and Consumer Use Information	26%

* EPA's calculation of the extent of CBI claims for physical form includes only the physical forms selected by the submitter as applying to the reported chemical. This calculation excludes those CBI claims for a non-selected physical form.

** EPA bases the overall extent of CBI on the number of CBI claims reported for all industrial processing and use information provided.

*** EPA determines the percent of industrial processing and use information that were claimed as CBI based on the unique combinations of codes for the type of process or use, the industry sector, and the industrial function of the chemical. EPA bases the extent of CBI on the number of CBI claims reported for every unique combination.

- **Reporting Thresholds and Exemptions** – An understanding of IUR reporting thresholds, the TSCA definition of a chemical substance, and the various IUR exemptions are important when using and interpreting the IUR data.

Reporting Threshold: The 2006 IUR includes information about chemical substances listed on the TSCA Inventory and manufactured in quantities of 25,000 pounds or more at a single site during calendar year 2005. Manufacturers of chemical substances in lesser volumes are not required to submit information for those chemicals. Note that for prior reporting cycles (2002 and earlier), the reporting threshold was 10,000 pounds at a site. Aggregated production volume information may not reflect the total volume if there are a substantial number of sites that manufacture the chemicals in quantities less than 25,000 pounds per year. Comparison of production for a particular chemical over time might be affected by the change in the reporting threshold.

Production Volume: Chemical substances may have both TSCA and non-TSCA uses. The volumes associated with the uses of a chemical regulated by other agencies such as the Food and Drug Administration (FDA) need not be reported under the IUR; therefore, a chemical might have a higher overall production volume than is reported under the IUR. For instance, a substance such as canola oil has industrial applications (uses for which it is considered a chemical substance under TSCA) and food applications (uses for which it would not be considered a chemical substance under TSCA). The volumes reported in response to the IUR should reflect only the volumes that meet the TSCA definition of a chemical substance.

Chemicals Excluded From Reporting: Under the IUR, manufacturers are not required to report information on certain chemical substances either because of the type of chemical substance

Definition: Naturally Occurring Chemical Substances

Naturally occurring chemical substances are defined for TSCA Inventory purposes as any chemical substance which is naturally occurring and:

- (1) Which is (i) unprocessed or (ii) processed only by manual, mechanical, or gravitational means; by dissolution in water; by flotation; or by heating solely to remove water; or
- (2) Which is extracted from air by any means, will automatically be included in the inventory under the category "Naturally Occurring Chemical Substances." Examples of such substances are: raw agricultural commodities; water, air, natural gas, and crude oil; and rocks, ores, and minerals.

or because of the manner of manufacture or use of the chemical substance. These excluded chemicals are in addition to those substances not considered to be chemical substances under TSCA (see the related discussion in *Introduction*). In general, manufacturers are not required to report IUR information for polymers, microorganisms, naturally occurring chemical substances, or certain natural gas streams. Chemical substances that are non-isolated intermediates, imported as part of an article, or are impurities are exempted from IUR reporting. Byproducts not used for a separate, non-exempt commercial purpose are also exempt from reporting. Note that many byproducts that are recycled for a commercial purpose are reportable under IUR.

Manufacturers Excluded From Reporting: Small manufacturers are generally exempt from IUR requirements. Small manufacturers must meet one of the following requirements:

1. Total annual sales of the site, combined with those of the parent company, domestic or foreign (if any), are less than \$4 million regardless of annual production volume; or
2. Total annual sales, combined with those of the parent company, domestic or foreign (if any), are less than \$40 million, and the annual production volume of that substance does not exceed 100,000 pounds at any individual site.

Processing and Use Reporting Exclusions: Reporting information on processing and use was not required for all chemicals reported in 2006. This information was only required for organic chemical substances manufactured in quantities of 300,000 pounds or more at a site during calendar year 2005. Manufacturers of inorganic chemicals, multi-component petroleum process streams, and certain other chemicals listed in the IUR regulation did not need to report the processing and use information⁷. However, manufacturers were required to report manufacturing information for these partially exempted substances. (See 40 CFR 710.46(b) for additional information.)

- **Reporting in Ranges**—The following data elements are reported under the IUR in ranges:
 - The maximum concentration of a chemical substance when manufactured or when used (in a commercial setting or by consumers).
 - The number of manufacturing and the number of industrial processing and use workers reasonably likely to be exposed to the chemical substance.
 - The number of industrial processing and use sites.

Reporting in ranges provides an overview of a given chemical industry, while reducing the industry reporting burden associated with developing a precise number for these data elements. In addition, the use of ranges reflects the level of detail available to the chemical manufacturers when providing information about the processing or use that is out of their direct control.

- **Processing and Use Information Not Readily Obtainable**—Information associated with the domestic processing and use of a chemical substance is reported by its manufacturers. Often the processing and use is not under the control of the IUR submitter; thus, companies reporting under IUR might have incomplete knowledge of the processing and/or use of their chemicals. Manufacturers were required to report this information to the extent that it was readily obtainable; they were not required to collect information from their customers. Submitters either indicated that a particular data element was not readily obtainable or reported the information only for the portion of their production volume for which it was readily obtainable. Submitters were not required to report the amount that was exported. As a result of these factors, the reported industrial processing and use information represents an undercounting of the actual processing and use situation in the United States. The net result is that process and use information was available for 72 percent of the total reported production volume for organic chemicals for which the reporting of processing and use information was required. The reported commercial and consumer use information accounted for 22 percent of this volume.

⁷ Reporting of processing and use information for these partially exempt chemicals was required if the chemical substance was subject to certain actions under TSCA, as specified in the introduction paragraph of 40 CFR 710.46.



Data Analysis and Key Findings

The following data analysis is a summary of the 2006 IUR data⁸, including confidential as well as non-confidential data. In order to protect the confidentiality of the information, EPA has aggregated most of the data and, except in a few instances, has not provided company- or chemical-specific information. Non-confidential company- or chemical-specific information can be obtained on the IUR Web site (www.epa.gov/iur).

This chapter includes information needed to properly interpret the specific data presented. In addition, please refer to the section entitled *What Should I Consider When Using the IUR Data?* in *Use of the IUR Data*.

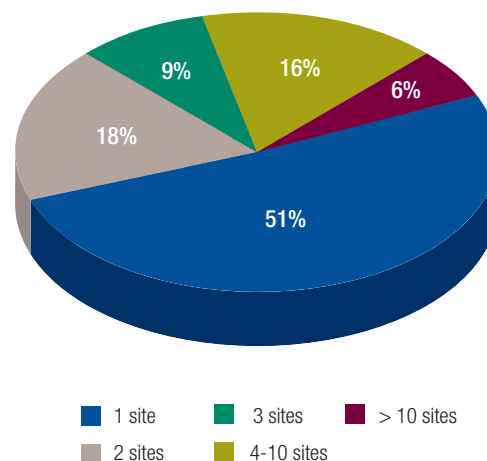
Manufacturing Data

As described in *Introduction*, the IUR data were reported by manufacturing sites. The manufacturing data are associated with each chemical at the time of domestic manufacture or import and include the chemical's domestically manufactured and imported production volume information, whether the chemical was site-limited, the number of workers reasonably likely to be exposed to the chemical, its maximum concentration, and its physical form. An IUR submission comprises reports for all chemicals manufactured on a site-specific basis and includes the manufacturing data for each reportable chemical domestically manufactured at that site or for which the import was controlled by that site.

Who reported?

More than 3,800 sites representing more than 1,500 companies reported information on 6,200 chemicals during the 2006 IUR submission period. As shown in Exhibit 4, slightly more than half of the chemical substances were reported by only one site, and

Exhibit 4. Percentage of Chemicals Reported by the Number of Sites



almost 80 percent were reported by three or fewer sites. Only 6 percent of the chemical substances were reported by more than 10 sites. This information indicates that there are few sources for the majority of the chemical substances in commerce in the United States.

Submitters were required to identify whether their chemical was domestically manufactured,

⁸ The data presented in this summary are based on version 1 of the 2006 IUR database. This is the same version used to develop the public data available on the IUR Web site (www.epa.gov/iur.)

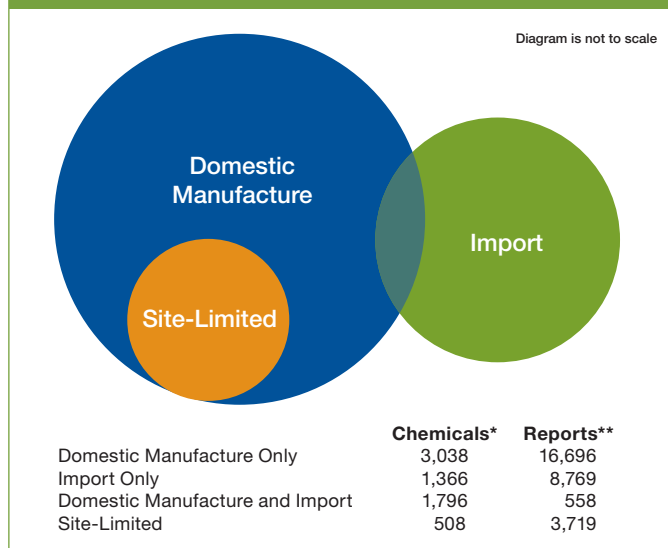
imported, or both domestically manufactured and imported. Exhibit 5 illustrates the relationship between the manufacturing and importing activities for both nationally aggregated chemical information and for individual reports. A report contains information for one chemical at a site; a site's submission typically contains multiple reports. Note that only submitters who reported domestic manufacturing only could report their chemical as site-limited.

Of the over 4,800 chemicals reported as domestically manufactured, 63 percent were only domestically manufactured and not imported. Similarly, of the over 3,100 chemicals reported as imported, 43 percent of the chemicals were imported only. As shown in Exhibit 5, nearly half of the reported chemicals were domestically manufactured only. While 29 percent of the chemicals were both imported and domestically manufactured, only two percent of the reports identified both activities. This exhibit also indicates that nearly 8 percent of the chemical substances were site-limited, which means they were consumed at the site of domestic manufacture. Fourteen percent of the reports identified site-limited chemicals, indicating that sites may report different activities for the same chemical.

Where Are the Chemicals Manufactured?

Sites that reported information were located in all 50 states, plus Puerto Rico, the Virgin Islands, and Washington, D.C. Some reporting sites were identified as headquarters or broker locations reporting imports only, while others were sites domestically manufacturing chemicals (but who may have also imported the chemical). The following discussion provides a geographical look at the chemical industry in the United States.

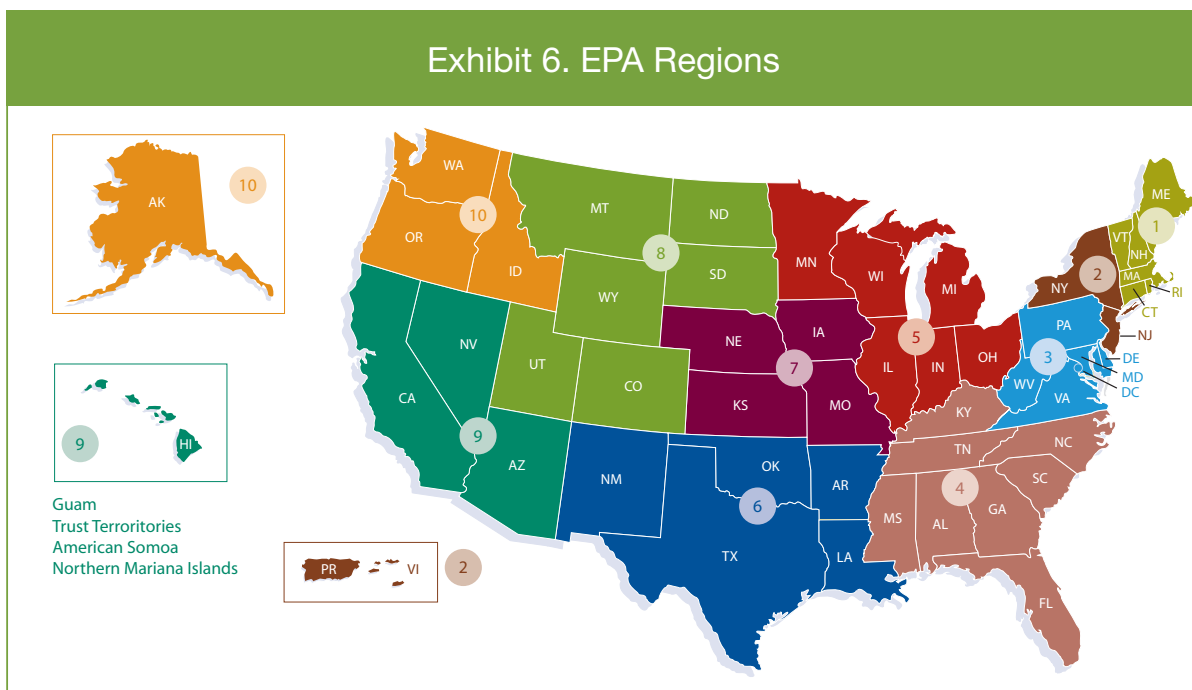
Exhibit 5. Manufacturing, Importing, and Site-Limited Activities



* In the analysis by chemical, EPA considers a chemical as "Domestic Manufacture Only" if ALL submitters report the chemical as domestic manufacture only. If a chemical is reported as manufactured at one site and imported at another site, the chemical is considered as both domestically manufactured and imported.

** This column shows the site activities for the number of individual reports submitted rather than by chemical. There are multiple reports for each chemical.

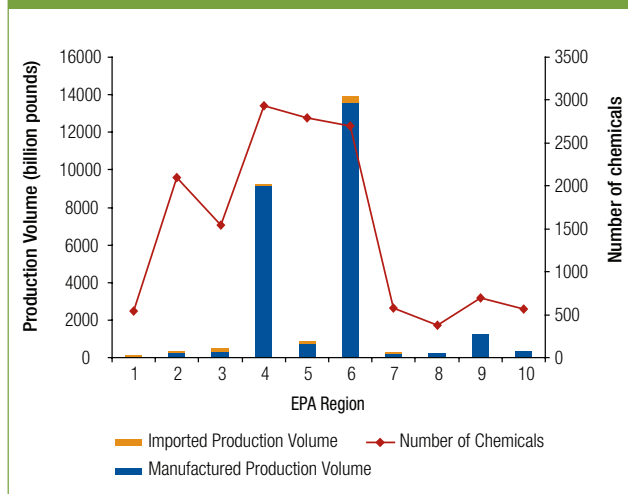
Exhibit 6. EPA Regions

*Information by EPA Region*

Chemical manufacturers reported 6,200 chemicals with a total 2005 production volume of approximately 27 trillion pounds. The map in Exhibit 6 presents the 10 EPA regions, and Exhibit 7 shows the distribution of the domestically manufactured and imported production volumes and the number of reported chemicals across the EPA regions. EPA Regions 4 (the south-eastern states) and 6 (the southern-central states) reported more than 80 percent of the production volume, followed by Region 9 (the south-western states), which represents 5 percent of the total imported volume reported. The remaining seven regions accounted for about 15 percent of the total production volume.

Looking more closely at the breakout between domestically manufactured and imported production volumes, the imported volumes contributed less than 3 percent of the total production volume and are mainly concentrated in three regions. Imported volumes for Region 6 account for 38 percent of the total imported volume, followed closely by Region

Exhibit 7. Production Volumes and the Number of Chemicals Reported by Each EPA Region



3 (24 percent) and Region 5 (12 percent). Regions 8, 9, and 10 each reported imported volumes accounting for approximately 5 percent of the total production volume, with the remaining imported volumes reported by sites in Regions 1, 2, 4, and 7.

Information by State

Information by state is presented in three different ways – by number of sites, by production volume, and by number of chemicals. Exhibit 8 shows the number of sites at which chemicals are manufactured in each state. Approximately half of the states had 50 or more sites reporting 2006 IUR information. Exhibit 9 illustrates the total reported production volume ranges in each state. More than half of the states manufacture between 10 billion and 100 billion pounds. The largest manufacturers, with production volumes of 1 trillion pounds or greater, are California, Texas, Florida, and Louisiana. These states account for approximately 86 percent of the total production volume. Exhibit 10 presents the top 10 states based on the total production volume and includes the number of chemicals reported for these states.

Examining the reporting of chemicals by production volume and number of chemicals, in addition to the number of sites, provides some insight into the distribution of the higher-volume chemicals. For instance, Texas is the top-ranked state based on the number of chemicals but ranks third for total production volume with a total volume of more than 2 trillion pounds. Louisiana, on the other hand, has the largest production volume but ranks fourth based on the number of chemicals. Both of these states have greater than 100 sites reporting under IUR and are located in Region 6, which has the greatest production volume. Florida ranks second overall in production volume but is not among the top five for the number of chemicals manufactured.

Exhibit 8. Number of Reporting Sites in Each State

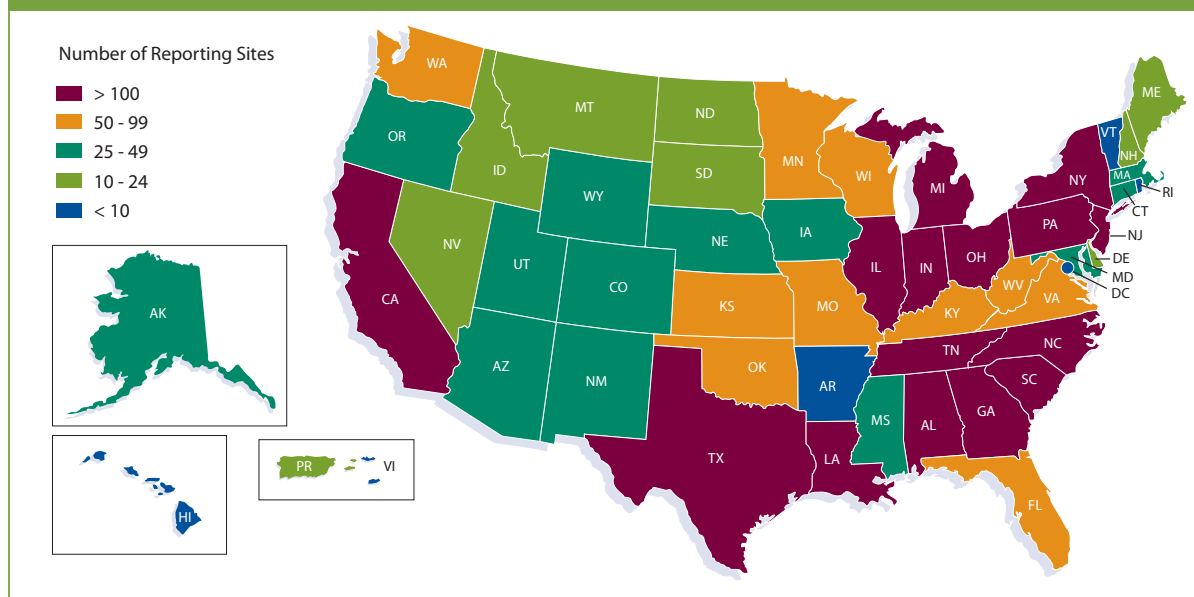


Exhibit 9. Total Production Volume Reported in Each State

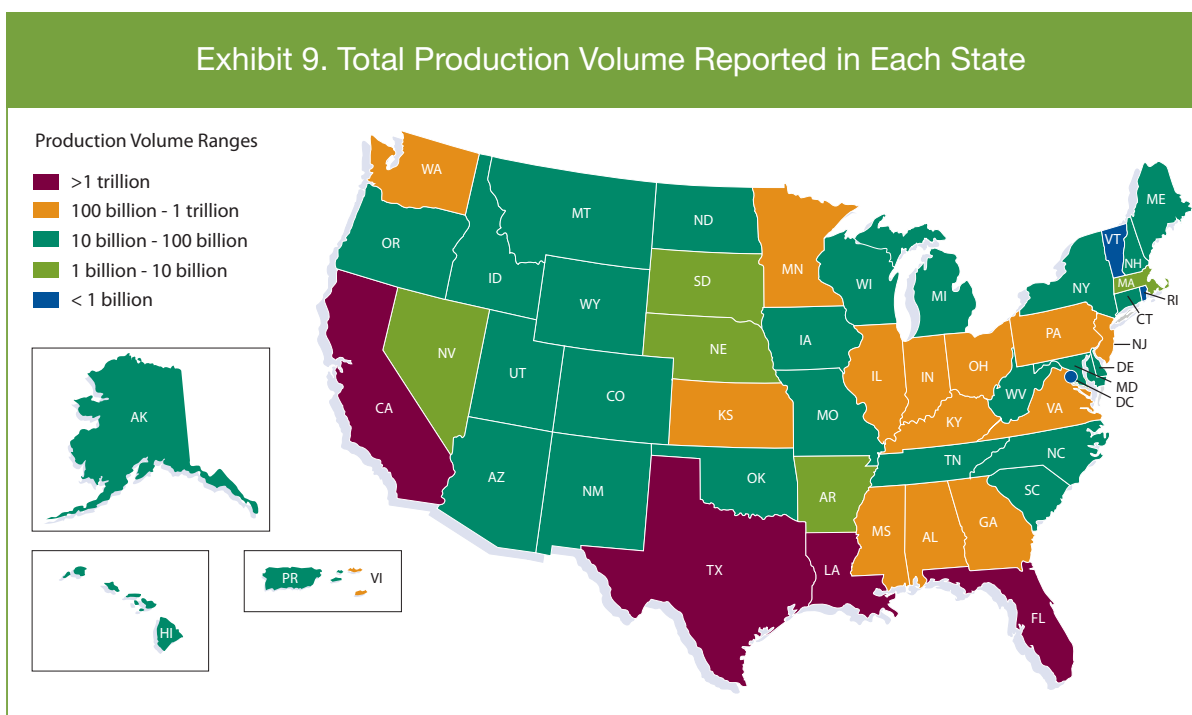
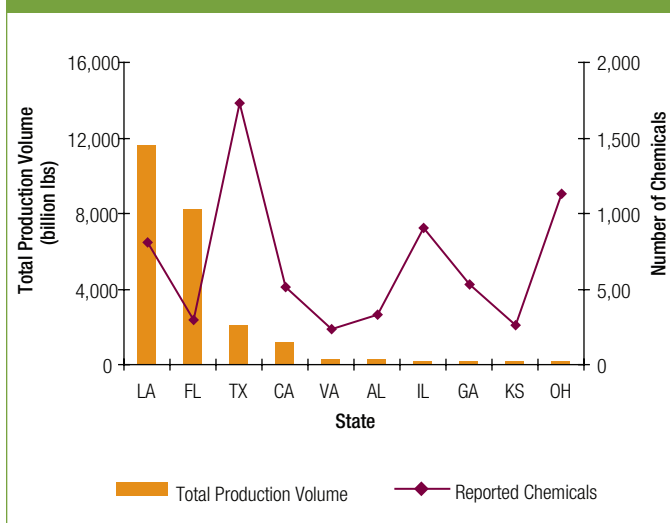


Exhibit 10. The Top 10 States by Production Volume and the Number of Chemicals They Report



Factors that drive the total production volume reported for a given state can include:

- **Chemical-specific volumes:** A small number of high-production volume chemicals may be manufactured in a state. For example, sulfite liquor (green) (CAS RN 68131-30-6) is part of the pulping cycle (see Exhibit 13) and accounts for between 1 trillion and 5 trillion pounds of the production volume reported to the IUR.
- **Number of chemicals reporting:** A large number of chemicals may be manufactured in smaller volumes within a state.
- **Import sites:** A site located within a given state may control the importation of a chemical but distribute the chemical nationwide.
- **Industrial byproducts:** Byproducts produced at chemical manufacturing plants, power plants, and processing plants are reported under IUR. For example, between 100 billion and 105 billion pounds of Ashes (residues) (CAS RN 68131-74-8) were reported in the 2006 reporting period. Ash is a byproduct of power generation and the majority of companies reporting this chemical are utilities. States with substantial power generation would report larger volumes of ash. See Exhibit 14.

Summary of Chemicals Reported

Exhibit 11 presents the top 25 chemicals based on the total production volume; the full list of the top 100 chemicals is presented in Exhibit A1 of the Appendix. The total production volume includes all reported production volumes under the 2006 IUR, including volumes that were claimed confidential. These 25 chemicals make up 84 percent of the total reported production volume, and the top 100 account for more than 94 percent of the total. A majority of these chemicals are produced during the refining of petroleum, although the top three chemicals are from the pulp and paper pulping cycle. Chemical-specific production volume infor-

mation is available for all non-confidential chemicals on the IUR Web site (www.epa.gov/iur).

Exhibit 12 further refines the top chemicals list by removing site-limited volumes. Twenty out of the resulting 25 chemicals are produced during the refining of petroleum, and only one of the pulping cycle chemicals remains in the top 25. These 25 chemicals make up more than 10 percent of the total reported production volume, and the top 100 account for more than 19 percent. See Exhibit A2 of the Appendix for the full list of the top 100 chemicals based on the total production volume excluding site-limited volumes.

Site-limited chemicals are manufactured and used at the same site. The site-limited volumes were excluded from Exhibit 12 because, in general, exposures to consumers and the general population will be less than exposures for volumes that are not site-limited. In addition, many site-limited chemicals are manufactured and used within a closed system, further limiting potential exposures to these chemicals. Note that, in comparing Exhibits 11 and 12, some chemicals are included in both lists. Chemicals which appear in Exhibit 11 but not in Exhibit 12 have a significant volume of their production used at the site where they are domestically manufactured. Site-limited volumes contribute approximately 77 percent of the 27 trillion pounds reported.

Exhibits 13 and 14 provide background information for two different chemical manufacturing scenarios—the pulping cycle and fly ash manufactured by utilities. Background information on industries with high production volume chemicals may help put the production volume data in context.

Exhibit 11. Top 25 Chemicals Based on the Total Reported Production Volume

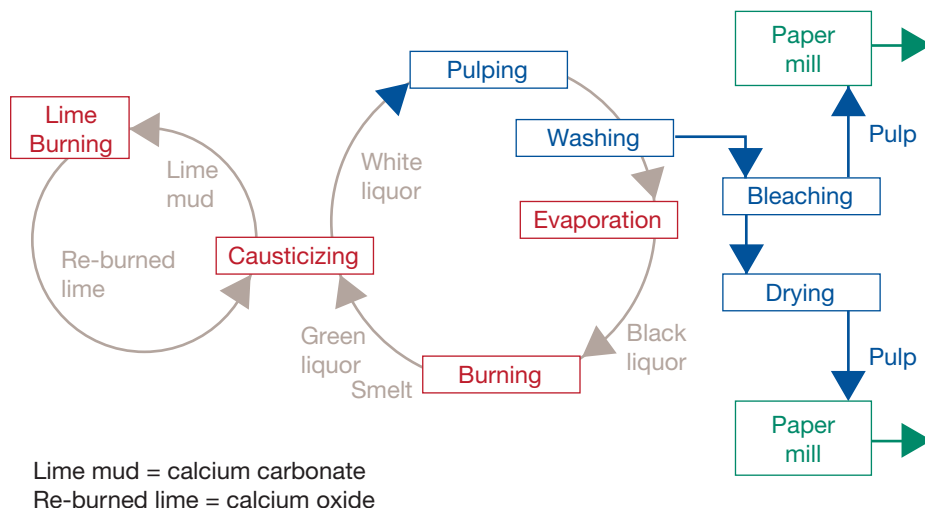
CAS Registry Number	Chemical Name	Production Volume Range (billion pounds)
66071-92-9	Sulfite liquors and Cooking liquors, spent	15,000 to 20,000
68131-30-6	Sulfite liquors and Cooking liquors, green	1,000 to 5,000
68131-33-9	Sulfite liquors and Cooking liquors, white	1,000 to 5,000
64741-56-6	Residues (petroleum), vacuum	295 to 300
64741-45-3	Residues (petroleum), atm. tower	225 to 230
64741-57-7	Gas oils (petroleum), heavy vacuum	220 to 225
8008-20-6	Kerosene (petroleum)	205 to 210
64741-44-2	Distillates (petroleum), straight-run middle	200 to 205
8052-42-4	Asphalt	195 to 200
8002-05-9	Petroleum	175 to 180
64742-80-9	Distillates (petroleum), hydrodesulfurized middle	145 to 150
471-34-1	Carbonic acid calcium salt (1:1)	145 to 150
115-07-1	1-Propene	130 to 135
64741-41-9	Naphtha (petroleum), heavy straight-run	130 to 135
64741-42-0	Naphtha (petroleum), full-range straight-run	125 to 130
12168-85-3	Calcium oxide silicate (Ca ₃ O(SiO ₄))	120 to 125
64741-79-3	Coke (petroleum)	115 to 120
64741-54-4	Naphtha (petroleum), heavy catalytic cracked	105 to 110
68131-74-8	Ashes (residues)	100 to 105
64741-55-5	Naphtha (petroleum), light catalytic cracked	95 to 100
64741-59-9	Distillates (petroleum), light catalytic cracked	90 to 95
64741-46-4	Naphtha (petroleum), light straight-run	90 to 95
10034-77-2	Silicic acid (H ₄ SiO ₄), calcium salt (1:2)	85 to 90
68955-35-1	Naphtha (petroleum), catalytic reformed	85 to 90
64742-46-7	Distillates (petroleum), hydrotreated middle	75 to 80

Exhibit 12. Top 25 Chemicals Based on the Total Reported Production Volume (Excluding Site-Limited Production Volumes)

CAS Registry Number	Chemical Name	Production Volume Range (billion pounds)
8052-42-4	Asphalt	190 to 195
64741-56-6	Residues (petroleum), vacuum	190 to 195
64741-57-7	Gas oils (petroleum), heavy vacuum	185 to 190
8008-20-6	Kerosene (petroleum)	185 to 190
8002-05-9	Petroleum	175 to 180
64741-44-2	Distillates (petroleum), straight-run middle	165 to 170
64741-45-3	Residues (petroleum), atm. Tower	140 to 145
64742-80-9	Distillates (petroleum), hydrodesulfurized middle	140 to 145
115-07-1	1-Propene	130 to 135
64741-79-3	Coke (petroleum)	110 to 115
12168-85-3	Calcium oxide silicate ($\text{Ca}_3\text{O}(\text{SiO}_4)$)	100 to 105
64741-41-9	Naphtha (petroleum), heavy straight-run	100 to 105
64741-42-0	Naphtha (petroleum), full-range straight-run	95 to 100
68131-74-8	Ashes (residues)	90 to 95
64741-54-4	Naphtha (petroleum), heavy catalytic cracked	90 to 95
10034-77-2	Silicic acid (H_4SiO_4), calcium salt (1:2)	85 to 90
64741-55-5	Naphtha (petroleum), light catalytic cracked	80 to 85
68955-35-1	Naphtha (petroleum), catalytic reformed	80 to 85
64742-46-7	Distillates (petroleum), hydrotreated middle	75 to 80
64741-46-4	Naphtha (petroleum), light straight-run	70 to 75
66071-92-9	Sulfite liquors and Cooking liquors, spent	70 to 75
65996-65-8	Iron ores, agglomerates	70 to 75
64741-59-9	Distillates (petroleum), light catalytic cracked	70 to 75
68553-00-4	Fuel oil, no. 6	70 to 75
64741-68-0	Naphtha (petroleum), heavy catalytic reformed	70 to 75

Exhibit 13. Chemicals in the Pulp and Paper Industry

The top three chemicals, by production volume, reported under the 2006 IUR were pulping liquors associated with the pulping process (see the Appendix for a listing of the top 100 chemicals). The diagram below illustrates this pulping process. Based on the TSCA Section 8 definition of manufacture, each section of the pulping cycle is considered manufacturing of a chemical substance.



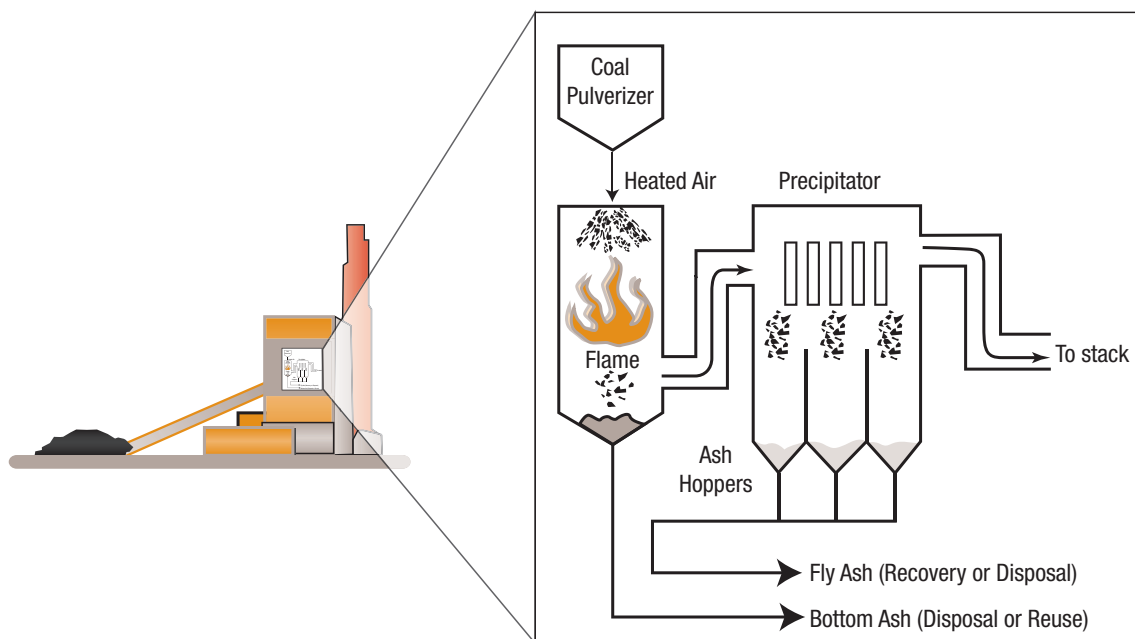
The papermaking process begins with the pulping of wood, accomplished by mixing white liquor with wood fiber and breaking down the fiber into pulp. A washing step separates the usable pulp destined to be made into paper from a waste byproduct stream known as black liquor. The black liquor generated in a paper mill was reported by companies in the paper mill industry during the initial TSCA Inventory reporting period and is listed in the Inventory as “Sulfite liquors and cooking liquors, spent” and, therefore, is subject to reporting under IUR. Black liquor is typically used for the production of energy, in the form of steam, and for producing inorganic substances that are recovered and used as precursors of pulping chemicals. A combustion process is used to generate heat for process steam and results in the production of inorganic chemicals that collect in the bottom of the boiler in the form of molten smelt. The smelt is dissolved in water to produce green liquor. During processing of the green liquor into white liquor, calcium oxide and calcium carbonate are also manufactured.

The pulp and paper industry is required to report information on the following substances generated in the above pulping process:

- Black liquor (or spent pulping liquors) (CAS RN: 66071-92-9)
- Green liquor (or smelt) (CAS RN: 68131-30-6)
- White liquor (CAS RN: 68131-33-9)
- Calcium carbonate (CAS RN: 471-34-1)
- Calcium oxide (CAS RN: 1305-79-9)

The total reported volume for these five chemicals is between 15 trillion and 20 trillion pounds. The highly repetitive nature of this loop or regeneration process, which results in the manufacture of these substances during each cycle of the loop, can lead to the large production volumes reported under IUR.

Exhibit 14. Production and Use of Fly Ash from Coal-Fired Power Plants



The diagram above depicts the coal-combustion process, which generates fly ash, or ashes (residues) (CAS RN: 68131-74-8) as a residual. The components of fly ash can vary based on the source of the coal being burned but primarily consist of silicon dioxide (SiO_2) (amorphous and crystalline) and calcium oxide (CaO). In the past, fly ash was generally captured and collected by electrostatic precipitators or filter bags and disposed of in a landfill. People are increasingly finding beneficial uses for fly ash, including usage in:

- Portland cement and grout
- Embankments and structural fill
- Waste stabilization and solidification
- Mine reclamation
- Stabilization of soft soils
- Road sub-base
- Aggregate
- Flowable fill
- Mineral filler in asphaltic concrete
- Minor applications in cellular concrete, geopolymers, roofing tiles, paints, metal castings, and filler in wood and plastic products.

Between 100 billion and 105 billion pounds of fly ash were reported in the 2006 IUR.

Additional Manufacturing-Related Information

In the 2006 IUR reporting cycle, submitters were required to report exposure-related manufacturing data, including the number of workers potentially exposed during manufacturing, the maximum concentration of a chemical when manufactured, and the percent of production volume by physical form.

Exhibit 15 represents the number of times each manufacturing worker range was reported. Submitters were required to report the number of manufacturing workers that were reasonably likely to be exposed to each chemical reported by their site. Of the 26,397 reports submitted, potential exposures to 10,000 workers or greater were reported 60 times. Manufacturing worker ranges of less than 10 and between 100 and 499 were most frequently reported.

The physical form of a chemical and its concentration in a mixture are factors in the assessment of exposure of workers to that chemical. Exhibit 16 illustrates that most chemicals were manufactured at relatively high concentrations, i.e. 90 percent or greater by weight. Exhibit 17 shows the number of chemicals reported for each physical form and the associated production volume. Liquids account for approximately 85 percent of the reported production volume and were the top reported physical form.

Exhibit 15. Number of Times Submitters Reported a Particular Range of the Number of Manufacturing Workers

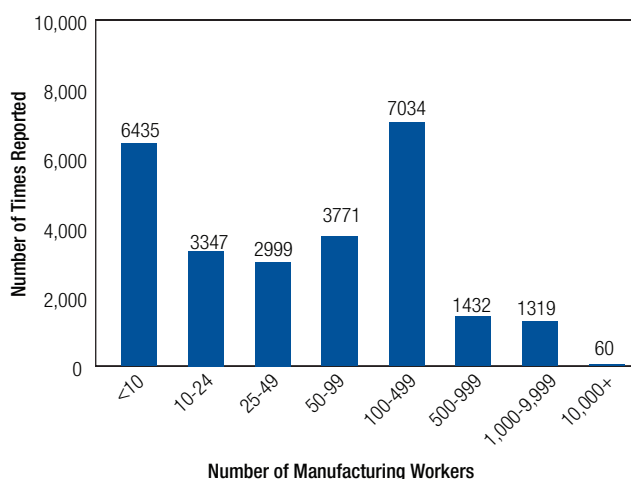


Exhibit 16. Number of Times Submitters Reported a Particular Range of Maximum Concentration

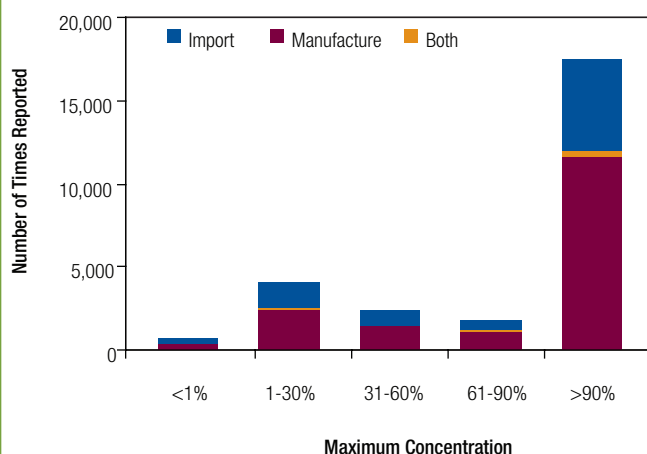
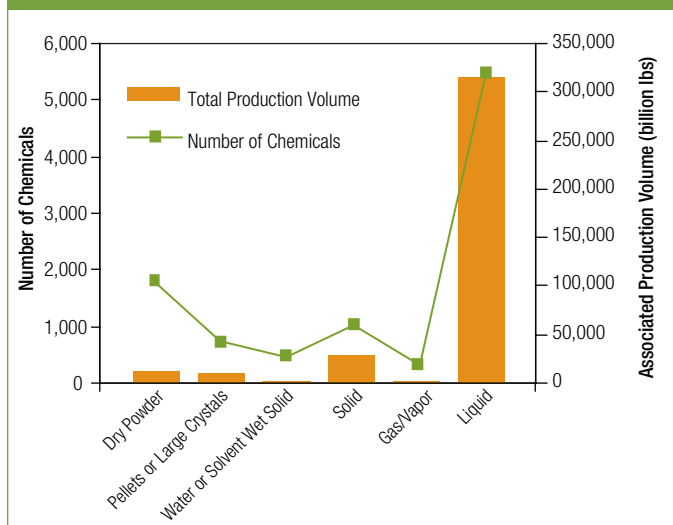


Exhibit 17. Number of Chemicals Reported for Each Physical Form and the Associated Production Volumes



Industrial Processing and Use Data

For the first time, the 2006 IUR required submitters to report information on industrial processing and use and commercial and consumer uses of the chemicals they manufacture at a site in quantities of 300,000 pounds or greater. This section discusses the industrial processing and use information collected about organic chemicals that meet the reporting requirements. For the 2006 IUR, manufacturers were not required to report processing and use information on their inorganic chemicals or on partially exempt chemicals.

For industrial processing and use, submitters provided data on unique combinations of the following:

- The processing and use codes, which designate how chemicals are used at an industrial site. Reporters selected one of the following:
 - Processing as a reactant
 - Processing—incorporation into formulation, mixture, or reaction product
 - Processing—incorporation into an article
 - Processing —repackaging
 - Use—non-incorporative activities

- North American Industrial Classification System (NAICS) codes, which define the industry using the chemical
- Industrial function categories, which define the function of each chemical. Submitters selected from a list of 33 categories, which include adsorbents, adhesives, coloring agents, and solvents.

Together, these three data elements define a use scenario. EPA can use the scenarios to evaluate chemicals for exposure characterization and priority-setting purposes. Submitters also had the option to report “Not Readily Obtainable” for each of the three data elements. See *Use of the IUR Data* for a discussion on considering “Not Readily Obtainable” when interpreting the IUR data.

Exhibits 18, 19, and 20 summarize the number of chemicals for which sites reported each of the three data elements. The IUR requires submitters to identify a five-digit NAICS code. Due to the large number of NAICS codes reported under IUR, EPA truncated the code to a three-digit number for the purpose of summarizing the major industry sectors in this document. Of the approximately 2,800 chemicals for which submitters were required to report industrial processing and use information, 86 percent are classified in the chemical manufacturing industry (NAICS code 325), and 57 percent are manufactured for further processing as a formulation or as a reactant. Over 1,300 chemicals were reported to be used as intermediates.

Exhibit 21 presents the 25 most frequently reported three-code combinations for the 2006 reporting period. Due to the number of confidentiality claims asserted, EPA is not presenting information in this document on the number of processing sites, the number of potentially exposed industrial workers, or the percent production volume for each unique three-code combination.

Exhibit 18. Number of Chemicals in Each Process or Use Category

Process or Use Category	Number of Chemicals
Processing—incorporation into formulation, mixture, or reaction product	1,640
Processing as a reactant	1,590
Use—nonincorporative activities	471
Processing—repackaging	453
Processing—incorporation into article	389
Not Readily Obtainable	337

Exhibit 19. Most Frequently Reported Three-Digit NAICS Codes

3-Digit NAICS	NAICS Description	Number of Chemicals
325	Chemical Manufacturing	2,468
326	Plastics and Rubber Products Manufacturing	378
324	Petroleum and Coal Products Manufacturing	309
424	Merchant Wholesalers, Nondurable Goods	277
322	Paper Manufacturing	130
211	Oil and Gas Extraction	117
311	Food Manufacturing	104
313	Textile Mills	77
327	Nonmetallic Mineral Product Manufacturing	72
336	Transportation Equipment Manufacturing	61

Exhibit 20. Number of Chemicals in Each Industrial Function Category

Industrial Function	Number of Chemicals
Intermediates	1,333
Surface active agents	311
Lubricants	272
Processing aid, not otherwise listed	248
Functional fluids	226
Solvents (which become part of product formulation or mixture)	188
Adhesives and binding agents	184
Process regulators, used in vulcanization or polymerization processes	180
Stabilizers	165
Fuels	149
Corrosion inhibitors and anti-scaling agents	116
Odor agents	104
Solvents (for cleaning or degreasing)	87
Agricultural chemicals (nonpesticidal)	85
Solvents (for chemical manufacture and processing and are not part of product at greater than 1% by weight)	80
Process regulators, other than polymerization or vulcanization processes	76
Viscosity adjustors	67
Flame retardants	63
Coloring agents, pigments	63
Coloring agents, dyes	50
Flotation agents	36
Photosensitive chemicals	32
pH-regulating agents	32
Plating agents and metal surface treating agents	24
Fillers	23

Exhibit 20. (continued)

Industrial Function	Number of Chemicals
Anti-adhesive agents	14
Reducing agents	13
Adsorbents and absorbents	12
Bleaching agents	12
Fixing agents	12
Oxidizing agents	10
Aerosol propellants	6
Other	841
Not Readily Obtainable	419

Exhibit 21. Most Frequently Reported Use Scenarios Based on Unique Combinations of Process or Use, Five-digit NAICS, and Industrial Function Categories: Number of Chemicals Reported

Type of Process or Use	5-digit NAICS Description	Industrial Function	Number of Chemicals
Processing as a reactant	Other Basic Organic Chemical Manufacturing	Intermediates	734
Processing as a reactant	Resin and Synthetic Rubber Manufacturing	Intermediates	200
Processing as a reactant	All Other Chemical Product and Preparation Manufacturing	Intermediates	157
Processing as a reactant	Pesticide and Other Agricultural Chemical Manufacturing	Intermediates	137
Processing—incorporation into formulation, mixture, or reaction product	Other Basic Organic Chemical Manufacturing	Other	131
Processing as a reactant	Other Basic Organic Chemical Manufacturing	Other	124
Processing as a reactant	Petrochemical Manufacturing	Intermediates	121

Exhibit 21. (continued)

Type of Process or Use	5-digit NAICS Description	Industrial Function	Number of Chemicals
Processing--incorporation into formulation, mixture, or reaction product	Soap and Cleaning Compound Manufacturing	Surface active agents	109
Processing--incorporation into formulation, mixture, or reaction product	All Other Chemical Product and Preparation Manufacturing	Other	102
Processing--incorporation into formulation, mixture, or reaction product	Other Basic Organic Chemical Manufacturing	Intermediates	101
Processing as a reactant	Soap and Cleaning Compound Manufacturing	Intermediates	96
Processing--incorporation into formulation, mixture, or reaction product	Other Basic Organic Chemical Manufacturing	Lubricants	70
Processing--incorporation into formulation, mixture, or reaction product	Other Basic Organic Chemical Manufacturing	Solvents (which become part of product formulation or mixture)	70
Processing--incorporation into formulation, mixture, or reaction product	All Other Chemical Product and Preparation Manufacturing	Not Readily Obtainable	66
Processing--incorporation into formulation, mixture, or reaction product	All Other Chemical Product and Preparation Manufacturing	Functional fluids	62
Processing--incorporation into formulation, mixture, or reaction product	All Other Chemical Product and Preparation Manufacturing	Lubricants	61
Processing--repackaging	Other Basic Organic Chemical Manufacturing	Intermediates	61
Processing--incorporation into formulation, mixture, or reaction product	Other Basic Organic Chemical Manufacturing	Process regulators, used in vulcanization or polymerization processes	51

Exhibit 21. (continued)

Type of Process or Use	5-digit NAICS Description	Industrial Function	Number of Chemicals
Processing as a reactant	Paint and Coating Manufacturing	Intermediates	50
Processing—incorporation into formulation, mixture, or reaction product	Other Petroleum and Coal Products Manufacturing	Lubricants	50
Processing—incorporation into formulation, mixture, or reaction product	Adhesive Manufacturing	Adhesives and binding agents	48
Not Readily Obtainable	Other Basic Organic Chemical Manufacturing	Surface active agents	46
Processing—repackaging	Other Basic Organic Chemical Manufacturing	Other	46
Processing—incorporation into formulation, mixture, or reaction product	All Other Chemical Product and Preparation Manufacturing	Odor agents	45
Processing as a reactant	Resin and Synthetic Rubber Manufacturing	Other	43

Commercial and Consumer Use Data

The 2006 IUR required submitters manufacturing 300,000 pounds or more of a chemical at a site to indicate whether these chemicals have commercial or consumer uses. More than 2,100 chemicals were reported as being incorporated into products with commercial and consumer uses. Exhibit 22 summarizes the number of unique chemicals reported and the total times submitters reported each product category. Note that chemicals may be reported under multiple categories. For each product category reported, submitters had to indicate whether the chemical was present in products intended

for use by children up to 14 years of age. Exhibit 23 shows that only 10 percent of the chemicals reported were used in products intended for use by children. As with industrial uses, submitters could indicate that the commercial and consumer data were not readily obtainable.

EPA defines “intended for use by children” to mean the chemical substance or mixture is used in or on a product that is specifically intended for use by children age 14 or younger. The chemical substance or mixture is intended for use by children if it satisfies at least one of the following questions for the product that incorporates the chemical substance or mixture:

1. Is the product commonly recognized (i.e., by a reasonable person) as being intended for children up to the age of 14?
2. Does the manufacturer of the product state through product labeling or other written materials that the product is intended or will be used by children up to the age of 14?
3. Is the advertising, promotion, or marketing of the product aimed at children up to the age of 14?

If a submitter answered “yes” to any of these questions, they should have indicated “yes” for intended use in a children’s product.

Definition: Commercial Use and Consumer Use

For purposes of IUR reporting, a **commercial use** means the use of a chemical substance or mixture in a commercial enterprise providing saleable goods or a service (such as painting contractors using paint products).

A **consumer use**, on the other hand, means the use of a chemical substance that is directly, or as part of a mixture, sold to or made available to consumers for their own use in or around a residence or in or around a school or recreational area.

Exhibit 22. Number of Chemicals and Reporting Frequency for the Commercial and Consumer Category

Commercial and Consumer Product Category	Number of Chemicals	Number of Times Reported
Rubber and plastic products	480	747
Paints and coatings	335	498
Lubricants, greases and fuel additives	303	475
Soaps and detergents	271	444
Adhesives and sealants	221	335
Paper products	147	242
“Fabrics, textiles and apparel”	124	146
Agricultural products (non-pesticidal)	108	173
Electrical and electronic products	107	132

Exhibit 22. (continued)

Commercial and Consumer Product Category	Number of Chemicals	Number of Times Reported
Transportation products	87	131
Automotive care products	85	110
Polishes and sanitation goods	63	79
Wood and wood furniture	57	82
Metal products	47	60
Photographic supplies	41	44
Glass and ceramic products	25	35
Lawn and garden products (non-pesticidal)	24	29
Leather products	23	24
Artists supplies	17	19
Other	1052	2015
Not Readily Obtainable	427	903

Exhibit 23. Number of Chemicals in Products Intended for Use by Children

Use in Children's Products	Number of Chemicals*
Chemicals with Reported Commercial/Consumer Uses	2,118
Chemicals with Reports of "Yes" for Children's Use	232
Chemicals with Reports of "No" for Children's Use	1,639
Chemicals with Reports of "NRO" for Children's Use	814

*Each unique chemical may have reports of both Yes and No or Not Readily Obtainable for children's use; therefore, the sum of the Yes, No, and Not Readily Obtainable responses is greater than the number of chemicals for which commercial and consumer uses were reported.



Next Steps

2006 Public Database

EPA is continually working to improve the IUR public database and plans to release additional non-confidential data pertaining to the 2006 reported information. The Agency was not able to release a complete and final version of the current database due to the need to address chemical identity errors requiring correction by the submitter. The errors included: submitters not specifically identifying a chemical substance, providing chemical names and CAS Registry Numbers that did not match, and providing a CAS Registry Number that did not exist. EPA continues efforts to obtain corrections for these submissions and will include corrected information with a future version of the public database.

Additional Analyses

EPA plans to release additional analyses and summaries of the 2006 IUR data. The additional analyses are expected to include information on chemicals with a reported use in products intended for children, the top chemicals in consumer products, and the top chemicals with the most workers reasonably likely to be exposed. The additional analyses and other summary information will be available in the near future.

TSCA Inventory Reset

Some of the chemical substances on the TSCA Inventory are no longer domestically manufactured in or imported into the United States; therefore, EPA is considering resetting the TSCA Inventory to more accurately reflect the chemical substances actually in commerce. EPA's ideas are outlined in *Background Discussion Piece: EPA's TSCA Inventory Reset*, which is available on the ChAMP Web site (www.epa.gov/CHAMP/pubs/invresetdiscussion.htm).

A reset TSCA Inventory would provide a more meaningful and usable resource for the Agency, the environmental community, industry, and the

public by reflecting only those chemical substances actually in commerce in the United States. The resulting, more accurate TSCA Inventory would allow EPA to better plan and execute its mission of protecting human health and the environment from chemicals that might present risks. EPA is committed to resetting the TSCA Inventory, but the concept is still in the early stages of development.

2011 Collection Period

The next IUR submission period will occur June 1 through September 30, 2011. Domestic manufacturers and importers will be required to report information on their 2010 manufacturing, processing, and use activities. To minimize problems with the 2011 IUR data, increase the data's usefulness, and prevent delays with the release of the associated database, EPA is exploring ways to address the issues that were encountered during the 2006 submission period and the Agency's subsequent database development and data use. Proposed changes to the IUR rule, improvements in guidance and training materials, and enhancements to EPA's internal process will help to address some of these issues before the next reporting cycle.

EPA hopes to dramatically increase the percentage of electronically submitted IUR data in the future. One approach to handling this issue is to require the use of the IUR reporting software (eIUR) and to require electronic submissions over the Internet as the only means of reporting for the 2011 IUR. Data submitted over the Internet through the Central Data Exchange (CDX) system were easily incorporated into the database and, due to the eIUR validation requirements, were internally consistent. The eIUR, which was needed in order to submit using CDX, contained a validation step that helped to ensure the completeness and consistency of the submission. Information submitted on a CD or in hardcopy was more likely to be damaged in transport, to be misinterpreted when scanned into the database, and to contain inconsistent and erroneous information.

Electronic submissions will ensure that IUR data will have completed a basic validation check, be quickly incorporated into a database and ready for immediate Agency use, and not be subject to subsequent data entry errors. The Agency is also considering immediately rejecting incomplete or incorrectly submitted IUR reports.

EPA is also exploring how to make the IUR data more useful, including ways to reduce seemingly excessive claims of confidential information and to encourage an increased level of reporting for the processing and use information. EPA will provide opportunities for the public to comment on proposed 2011 IUR regulatory changes.



Appendix

Exhibit A1. Top 100 Chemicals Based on Total Reported Production Volume

CAS Registry Number	Chemical Name	Production Volume Range (billion pounds)
66071-92-9	Sulfite liquors and Cooking liquors, spent	15,000 to 20,000
68131-30-6	Sulfite liquors and Cooking liquors, green	1,000 to 5,000
68131-33-9	Sulfite liquors and Cooking liquors, white	1,000 to 5,000
64741-56-6	Residues (petroleum), vacuum	295 to 300
64741-45-3	Residues (petroleum), atm. tower	225 to 230
64741-57-7	Gas oils (petroleum), heavy vacuum	220 to 225
8008-20-6	Kerosine (petroleum)	205 to 210
64741-44-2	Distillates (petroleum), straight-run middle	200 to 205
8052-42-4	Asphalt	195 to 200
8002-05-9	Petroleum	175 to 180
64742-80-9	Distillates (petroleum), hydrodesulfurized middle	145 to 150
471-34-1	Carbonic acid calcium salt (1:1)	145 to 150
115-07-1	1-Propene	130 to 135
64741-41-9	Naphtha (petroleum), heavy straight-run	130 to 135
64741-42-0	Naphtha (petroleum), full-range straight-run	125 to 130
12168-85-3	Calcium oxide silicate ($\text{Ca}_3\text{O}(\text{SiO}_4)$)	120 to 125
64741-79-3	Coke (petroleum)	115 to 120
64741-54-4	Naphtha (petroleum), heavy catalytic cracked	105 to 110
68131-74-8	Ashes (residues)	100 to 105
64741-55-5	Naphtha (petroleum), light catalytic cracked	95 to 100
64741-59-9	Distillates (petroleum), light catalytic cracked	90 to 95
64741-46-4	Naphtha (petroleum), light straight-run	90 to 95
10034-77-2	Silicic acid (H_4SiO_4), calcium salt (1:2)	85 to 90

Appendix

Exhibit A1. (continued)

CAS Registry Number	Chemical Name	Production Volume Range (billion pounds)
68955-35-1	Naphtha (petroleum), catalytic reformed	85 to 90
64742-46-7	Distillates (petroleum), hydrotreated middle	75 to 80
7664-93-9	Sulfuric acid	75 to 80
64741-63-5	Naphtha (petroleum), light catalytic reformed	75 to 80
64741-68-0	Naphtha (petroleum), heavy catalytic reformed	75 to 80
65996-65-8	Iron ores, agglomerates	70 to 75
68553-00-4	Fuel oil, no. 6	70 to 75
74-98-6	Propane	70 to 75
64742-48-9	Naphtha (petroleum), hydrotreated heavy	70 to 75
65996-67-0	Iron, furnace	65 to 70
64742-81-0	Kerosine (petroleum), hydrodesulfurized	65 to 70
64741-60-2	Distillates (petroleum), intermediate catalytic cracked	65 to 70
68476-34-6	Fuels, diesel, no. 2	60 to 65
64741-58-8	Gas oils (petroleum), light vacuum	60 to 65
68476-30-2	Fuel oil, no. 2	55 to 60
1305-78-8	Calcium oxide (CaO)	55 to 60
64742-59-2	Gas oils (petroleum), hydrotreated vacuum	55 to 60
74-85-1	Ethene	50 to 55
106-97-8	Butane	45 to 50
64741-43-1	Gas oils (petroleum), straight-run	45 to 50
64741-81-7	Distillates (petroleum), heavy thermal cracked	45 to 50
64741-64-6	Naphtha (petroleum), full-range alkylate	45 to 50
70592-78-8	Distillates (petroleum), vacuum	45 to 50
64741-87-3	Naphtha (petroleum), sweetened	40 to 45
64742-79-6	Gas oils (petroleum), hydrodesulfurized	40 to 45
64741-82-8	Distillates (petroleum), light thermal cracked	40 to 45

Appendix

Exhibit A1. (continued)

CAS Registry Number	Chemical Name	Production Volume Range (billion pounds)
68915-97-9	Gas oils (petroleum), straight-run, high-boiling	40 to 45
68919-37-9	Naphtha (petroleum), full-range reformed	40 to 45
64742-93-4	Asphalt, oxidized	35 to 40
64742-86-5	Gas oils (petroleum), hydrodesulfurized heavy vacuum	35 to 40
64742-49-0	Naphtha (petroleum), hydrotreated light	35 to 40
68410-00-4	Distillates (petroleum), crude oil	35 to 40
12068-35-8	Aluminum calcium iron oxide ($\text{AlCa}_2\text{FeO}_5$)	35 to 40
7664-41-7	Ammonia	35 to 40
124-38-9	Carbon dioxide	35 to 40
64741-62-4	Clarified oils (petroleum), catalytic cracked	35 to 40
64742-38-7	Distillates (petroleum), clay-treated middle	35 to 40
1344-28-1	Aluminum oxide (Al_2O_3)	35 to 40
65996-71-6	Slags, steelmaking	30 to 35
64742-82-1	Naphtha (petroleum), hydrodesulfurized heavy	30 to 35
68477-85-0	Gases (petroleum), C4-rich	30 to 35
12042-78-3	Aluminum calcium oxide ($\text{Al}_2\text{Ca}_3\text{O}_6$)	30 to 35
68527-19-5	Hydrocarbons, C1-4, debutanizer fraction	30 to 35
68606-11-1	Gasoline, straight-run, topping-plant	30 to 35
64742-73-0	Naphtha (petroleum), hydrodesulfurized light	25 to 30
64742-47-8	Distillates (petroleum), hydrotreated light	25 to 30
65996-77-2	Coke (coal)	25 to 30
68308-27-0	Fuel gases, refinery	25 to 30
64741-70-4	Naphtha (petroleum), isomerization	25 to 30
68333-25-5	Distillates (petroleum), hydrodesulfurized light catalytic cracked	25 to 30
68955-27-1	Distillates (petroleum), petroleum residues vacuum	25 to 30
107-06-2	Ethane, 1,2-dichloro-	25 to 30

Appendix

Exhibit A1. (continued)

CAS Registry Number	Chemical Name	Production Volume Range (billion pounds)
74-84-0	Ethane	20 to 25
64741-77-1	Distillates (petroleum), light hydrocracked	20 to 25
68410-63-9	Natural gas, dried	20 to 25
64741-78-2	Naphtha (petroleum), heavy hydrocracked	20 to 25
68476-46-0	Hydrocarbons, C3-11, catalytic cracker distillates	20 to 25
75-28-5	Propane, 2-methyl-	20 to 25
65997-19-5	Steel manufacture, chemicals	20 to 25
68478-17-1	Residues (petroleum), heavy coker gas oil and vacuum gas oil	20 to 25
68783-08-4	Gas oils (petroleum), heavy atmospheric	20 to 25
64741-69-1	Naphtha (petroleum), light hydrocracked	20 to 25
65996-69-2	Slags, ferrous metal, blast furnace	20 to 25
7704-34-9	Sulfur	20 to 25
68334-30-5	Fuels, diesel	20 to 25
64741-47-5	Natural gas condensates (petroleum)	20 to 25
68475-57-0	Alkanes, C1-2	20 to 25
7782-50-5	Chlorine	20 to 25
68915-96-8	Distillates (petroleum), heavy straight-run	20 to 25
8030-30-6	Naphtha	20 to 25
70592-77-7	Distillates (petroleum), light vacuum	15 to 20
71-43-2	Benzene	15 to 20
57-13-6	Urea	15 to 20
7783-28-0	Phosphoric acid, ammonium salt (1:2)	15 to 20
64741-76-0	Distillates (petroleum), heavy hydrocracked	15 to 20
1309-37-1	Iron oxide (Fe ₂ O ₃)	15 to 20
1310-73-2	Sodium hydroxide (Na(OH))	15 to 20

Appendix

Exhibit A2. Top 100 Chemicals Based on the Total Reported Production Volume (Excluding Site-Limited Production Volumes)

CAS Registry Number	Chemical Name	Production Volume Range (billion pounds)
8052-42-4	Asphalt	190 to 195
64741-56-6	Residues (petroleum), vacuum	190 to 195
64741-57-7	Gas oils (petroleum), heavy vacuum	185 to 190
8008-20-6	Kerosine (petroleum)	185 to 190
8002-05-9	Petroleum	175 to 180
64741-44-2	Distillates (petroleum), straight-run middle	165 to 170
64741-45-3	Residues (petroleum), atm. tower	140 to 145
64742-80-9	Distillates (petroleum), hydrodesulfurized middle	140 to 145
115-07-1	1-Propene	130 to 135
64741-79-3	Coke (petroleum)	110 to 115
12168-85-3	Calcium oxide silicate ($\text{Ca}_3\text{O}(\text{SiO}_4)$)	100 to 105
64741-41-9	Naphtha (petroleum), heavy straight-run	100 to 105
64741-42-0	Naphtha (petroleum), full-range straight-run	95 to 100
68131-74-8	Ashes (residues)	90 to 95
64741-54-4	Naphtha (petroleum), heavy catalytic cracked	90 to 95
10034-77-2	Silicic acid (H_4SiO_4), calcium salt (1:2)	85 to 90
64741-55-5	Naphtha (petroleum), light catalytic cracked	80 to 85
68955-35-1	Naphtha (petroleum), catalytic reformed	80 to 85
64742-46-7	Distillates (petroleum), hydrotreated middle	75 to 80
64741-46-4	Naphtha (petroleum), light straight-run	70 to 75
66071-92-9	Sulfite liquors and Cooking liquors, spent	70 to 75
65996-65-8	Iron ores, agglomerates	70 to 75
64741-59-9	Distillates (petroleum), light catalytic cracked	70 to 75
68553-00-4	Fuel oil, no. 6	70 to 75
64741-68-0	Naphtha (petroleum), heavy catalytic reformed	70 to 75

Appendix

Exhibit A2. (continued)

CAS Registry Number	Chemical Name	Production Volume Range (billion pounds)
74-98-6	Propane	65 to 70
64741-60-2	Distillates (petroleum), intermediate catalytic cracked	65 to 70
64742-81-0	Kerosine (petroleum), hydrodesulfurized	60 to 65
68476-34-6	Fuels, diesel, no. 2	60 to 65
68476-30-2	Fuel oil, no. 2	55 to 60
7664-93-9	Sulfuric acid	50 to 55
74-85-1	Ethene	45 to 50
65996-67-0	Iron, furnace	45 to 50
64741-63-5	Naphtha (petroleum), light catalytic reformed	45 to 50
68131-30-6	Sulfite liquors and Cooking liquors, green	45 to 50
106-97-8	Butane	40 to 45
64741-64-6	Naphtha (petroleum), full-range alkylate	40 to 45
64742-48-9	Naphtha (petroleum), hydrotreated heavy	40 to 45
64741-58-8	Gas oils (petroleum), light vacuum	40 to 45
64741-87-3	Naphtha (petroleum), sweetened	40 to 45
64742-93-4	Asphalt, oxidized	35 to 40
68915-97-9	Gas oils (petroleum), straight-run, high-boiling	35 to 40
68919-37-9	Naphtha (petroleum), full-range reformed	35 to 40
12068-35-8	Aluminum calcium iron oxide (AlCa ₂ FeO ₅)	35 to 40
68410-00-4	Distillates (petroleum), crude oil	35 to 40
124-38-9	Carbon dioxide	35 to 40
64742-38-7	Distillates (petroleum), clay-treated middle	35 to 40
1344-28-1	Aluminum oxide (Al ₂ O ₃)	35 to 40
1305-78-8	Calcium oxide (CaO)	30 to 35
7664-41-7	Ammonia	30 to 35

Appendix

Exhibit A2. (continued)

CAS Registry Number	Chemical Name	Production Volume Range (billion pounds)
65996-71-6	Slags, steelmaking	30 to 35
64741-62-4	Clarified oils (petroleum), catalytic cracked	30 to 35
64742-86-5	Gas oils (petroleum), hydrodesulfurized heavy vacuum	30 to 35
64742-49-0	Naphtha (petroleum), hydrotreated light	30 to 35
12042-78-3	Aluminum calcium oxide ($\text{Al}_2\text{Ca}_3\text{O}_6$)	25 to 30
64742-79-6	Gas oils (petroleum), hydrodesulfurized	25 to 30
68606-11-1	Gasoline, straight-run, topping-plant	25 to 30
68131-33-9	Sulfite liquors and Cooking liquors, white	25 to 30
64742-82-1	Naphtha (petroleum), hydrodesulfurized heavy	25 to 30
65996-77-2	Coke (coal)	25 to 30
64742-59-2	Gas oils (petroleum), hydrotreated vacuum	25 to 30
64741-81-7	Distillates (petroleum), heavy thermal cracked	25 to 30
68333-25-5	Distillates (petroleum), hydrodesulfurized light catalytic cracked	25 to 30
64742-47-8	Distillates (petroleum), hydrotreated light	25 to 30
64741-43-1	Gas oils (petroleum), straight-run	25 to 30
68477-85-0	Gases (petroleum), C4-rich	25 to 30
64741-70-4	Naphtha (petroleum), isomerization	20 to 25
74-84-0	Ethane	20 to 25
68410-63-9	Natural gas, dried	20 to 25
68476-46-0	Hydrocarbons, C3-11, catalytic cracker distillates	20 to 25
70592-78-8	Distillates (petroleum), vacuum	20 to 25
64741-47-5	Natural gas condensates (petroleum)	20 to 25
65997-19-5	Steel manufacture, chemicals	20 to 25
68334-30-5	Fuels, diesel	20 to 25
68475-57-0	Alkanes, C1-2	20 to 25

Appendix

Exhibit A2. (continued)

CAS Registry Number	Chemical Name	Production Volume Range (billion pounds)
7704-34-9	Sulfur	20 to 25
75-28-5	Propane, 2-methyl-	20 to 25
64741-82-8	Distillates (petroleum), light thermal cracked	20 to 25
68955-27-1	Distillates (petroleum), petroleum residues vacuum	15 to 20
68478-17-1	Residues (petroleum), heavy coker gas oil and vacuum gas oil	15 to 20
64741-69-1	Naphtha (petroleum), light hydrocracked	15 to 20
71-43-2	Benzene	15 to 20
57-13-6	Urea	15 to 20
65996-69-2	Slags, ferrous metal, blast furnace	15 to 20
7783-28-0	Phosphoric acid, ammonium salt (1:2)	15 to 20
1309-37-1	Iron oxide (Fe ₂ O ₃)	15 to 20
64741-78-2	Naphtha (petroleum), heavy hydrocracked	15 to 20
64741-77-1	Distillates (petroleum), light hydrocracked	15 to 20
7782-50-5	Chlorine	15 to 20
64742-73-0	Naphtha (petroleum), hydrosulfurized light	15 to 20
1310-73-2	Sodium hydroxide (Na(OH))	15 to 20
68783-08-4	Gas oils (petroleum), heavy atmospheric	15 to 20
64-17-5	Ethanol	15 to 20
8030-30-6	Naphtha	15 to 20
75-01-4	Ethene, chloro-	15 to 20
64741-86-2	Distillates (petroleum), sweetened middle	10 to 15
68527-19-5	Hydrocarbons, C1-4, debutanizer fraction	10 to 15
68527-27-5	Naphtha (petroleum), full-range alkylate, butane-contg.	10 to 15
68783-12-0	Naphtha (petroleum), unsweetened	10 to 15
1634-04-4	Propane, 2-methoxy-2-methyl-	10 to 15