

SURVEY METHODS FOR NONFUEL MINERALS

By Kenneth W. Mlynarski

The U.S. Geological Survey (USGS) Minerals Information Team collects worldwide data on virtually every commercially important nonfuel mineral commodity. These data form the base for tracking and assessing the health of the minerals sector of the U.S. economy.

The USGS data collection activity was instituted by the 47th Congress in an appropriations act of August 7, 1882 (22 Stat. 329), which placed the collection of mineral statistics on an annual basis. The most recent authority for the USGS survey activity is the National Materials and Minerals Policy, Research and Development Act of 1980 (Public Law 96-479, 96th Congress). This act strengthens protection for proprietary data provided to the U.S. Department of the Interior by persons or firms engaged in any phase of mineral or mineral-material production or consumption.

Data Collection Surveys

The USGS begins the collection of domestic nonfuel minerals and materials statistics by appraising the information requirements of Government and private organizations of the United States. Requirements that can be met by collecting data from minerals establishments are posed as questions on USGS surveys. Figure 1 shows a typical survey form.

Specific questions about the production, consumption, shipment, and other activities of mineral commodities are structured in the survey forms to provide meaningful aggregated data. Thus, the entire mineral economic cycle from production through consumption is covered by 144 monthly, quarterly, semiannual, and annual surveys.

After the survey form has been designed, a list of the appropriate establishments to be canvassed is developed. Many sources are used to determine which companies, mines, plants, and other operations should be included on the survey mailing list. State geologists, Federal organizations (e.g., Mine Safety and Health Administration), trade associations, industry representatives, and trade publications and directories are some of the sources that are used to develop and update survey listings. With few exceptions, a complete canvass of the list of establishments is employed rather than a sample survey. The iron and steel scrap industry is one of the exceptions where a sample survey is conducted.

The Paperwork Reduction Act requires that any Government agency wanting to collect information from 10 or more individuals or establishments must first obtain approval from the Office of Management and Budget (OMB). OMB approves the need to collect the data and

protects industry from unwarranted Government paperwork.

Survey Processing

The USGS surveys approximately 25,000 establishments. Each year, the USGS mails about 40,000 forms that gather information for 144 different surveys. Each completed survey form returned to the USGS undergoes extensive analysis to ensure the highest possible accuracy of the mineral data. The statistical staff monitors all surveys to ensure that errors are not created by reporting in physical units different from the units requested on the form. Relationships between related measures, such as produced crude ore and marketable crude ore, are analyzed for consistency. Engineering relationships, such as recovery factors from ores and concentrates, also are employed. The totals for each form are verified, and currently reported data are checked against prior reports to detect possible errors or omissions.

For the majority of the surveys, which are automated, the forms are reviewed to ensure that data are complete and correct before entering into the computer. The computer is programmed to conduct a series of automated checks to verify mathematical consistency and to identify discrepancies between the data reported and logically acceptable responses.

The USGS is modernizing and automating all of its survey processing and data dissemination functions. Automated commodity data system functions include computerized preparation of statistical tables, the use of desktop publishing to integrate text and tables, and electronic dissemination through the Internet. Also, information on minerals and mineral-related publications is now available through an easy-to-use automated fax response system known as MINES FaxBack.

Survey Responses.—To enable the reader to better understand the basis on which the statistics are calculated, each commodity annual report includes a section entitled "Domestic Data Coverage." This section briefly describes the data sources, the number of establishments surveyed, the response percentage, and the method of estimating the production or consumption for nonrespondents.

To produce reliable aggregated data, the USGS employs efficient procedures for handling instances of nonresponse. Failure to return the initial survey form results in a second mailing of the form. If the second form is not returned, telephone calls are made to the nonrespondents. The followup calls provide the necessary data to complete the survey forms and/or verify questionable data entries. Periodic visits to minerals establishments also are made by

USGS commodity specialists to gather missing data and to explain the importance of the establishment's reporting. By describing the use of the published statistics and showing the impact of nonresponse, the USGS strives to encourage respondents to give a complete and accurate reply.

The OMB "Guidelines for Reducing Reporting Burden" stipulates that the minimum acceptable response rate shall be 75% of the panel surveyed. In addition, the USGS strives for a minimum reporting level of 75% of the quantity produced or consumed (depending on the survey) for certain key statistics. Response rates are periodically reviewed. For those surveys not meeting the minimum reporting level, procedures are developed and implemented to improve response rates.

Estimation for Nonresponse.—When efforts to obtain a response to a survey fail, it becomes necessary to employ estimation or imputation techniques to account for missing data. These techniques are most effective when the response rate is relatively high. Some of the estimation methods depend on knowledge of prior establishment reporting, while other techniques rely on external information to estimate the missing data. When survey forms are received after the current publication has been completed, the forms are edited, necessary imputations are made for missing data, and the survey data base is updated. The revised data are reported in later publications.

Protection of Proprietary Data.—The USGS relies on the cooperation of the U.S. minerals industry to provide the mineral data that are presented in this and other USGS publications. Without a strong response to survey requests, the USGS would not be able to present reliable statistics. The USGS, in turn, respects the proprietary nature of the data received from the individual companies and establishments. To ensure that proprietary rights will not be violated, the USGS analyzes each of the aggregated statistics to determine if the data reported by an individual establishment can be deduced from the aggregated statistics. If, for example, there are only two significant producers of a commodity in a given State, the USGS will not publish the State total because either producer could readily estimate the production of the other. It is this obligation to protect proprietary information that results in the "Withheld" or "W" entries in the published tables. However, if a company gives permission in writing, the USGS will publish the data as long as the data from other respondents are protected from disclosure.

International Data

International data are collected by country specialists and data assistants in the Minerals Information Team. The data are gathered from various sources, including published reports of foreign Government mineral and statistical agencies, international organizations, the U.S. Department of State, the United Nations, the Organization of Petroleum Exporting Countries, and personal contact by specialists traveling abroad. Each February, an annual "Minerals

Questionnaire" is sent through the Department of State to more than 70 U.S. embassies asking them to provide estimates of mineral production for the host country for the preceding year. Missing data are estimated by USGS country specialists based on historical trends and on specialists' knowledge of current production capabilities in each country.

Publications

The USGS disseminates current and historical minerals information through a broad range of printed publications.

The Minerals Yearbook summarizes annually, on a calendar-year basis, the significant economic and technical developments in the mineral industries. Three separate volumes are issued each year: Volume I, Metals and Minerals; Volume II, Area Reports, Domestic; and Volume III, Area Reports, International. Chapters in Volume I are issued separately as Mineral Industry Surveys (MIS) before the bound volume is available. Volume I of the Minerals Yearbook presents, by mineral commodity, salient statistics on production, trade, consumption, reserves, and other measures of economic activity. Volume II of the Minerals Yearbook reviews the U.S. minerals industry by State and island possessions. Volume III of the Minerals Yearbook contains the latest available mineral data for the year of review on more than 185 foreign countries and discusses the importance of minerals to the economies of these nations.

The MIS contain timely statistical and economic data on minerals. The surveys are designed to keep Government agencies and the public, particularly the mineral industry and the business community, informed of trends in the production, distribution, inventories, and consumption of minerals. Frequency of issue depends on the demand for current data. The MIS are released monthly, quarterly, semiannually, and annually.

Mineral Commodity Summaries, an up-to-date summary of about 80 nonfuel mineral commodities, is the earliest Government publication to furnish estimates covering the previous year's nonfuel mineral industry data. It contains information on the domestic industry structure, Government programs, tariffs, 5-year salient statistics, and a summary of international mining news.

Metal Industry Indicators, published monthly, contains indexes that measure the current and future performance of four U.S. minerals industries. For each of the four industries, a composite coincident index and a composite leading index have been developed based on procedures and data similar to those used to construct the U.S. Department of Commerce's coincident and leading cyclical indicators for the national economy.

The MIS and the Metal Industry Indicators are available at no charge from Publication Distribution, Cochran Mill Road, P.O. Box 18070, Pittsburgh, PA 15236, (412) 892-4338.

Minerals Yearbooks and Mineral Commodity Summaries may be purchased from the Superintendent of Documents,

U.S. Government Printing Office, Washington, DC 20402, (202) 512-1800.

Mineral Commodity Summaries also may be purchased from the National Technical Information Service, Springfield, VA 22161, 1-800-553-NTIS (in Virginia and foreign countries: 1-703-487-4650).

Some Minerals Information publications are also available on a CD-ROM format. The CD-ROM is updated three times per year. It is available from the Government Printing Office at the address and phone number listed above.

Electronic Data Dissemination

In addition to the USGS's printed publications, current information on minerals and mineral-related publications from the USGS is now available through an easy-to-use automated fax response system. The MINES-FaxBack service allows callers to retrieve information and order some publications for delivery to their fax machines in minutes, 24 hours per day, 7 days per week. MINES-FaxBack makes monthly and quarterly MIS publications available to the

public at the same time they are forwarded to the printer.

MINES-FaxBack works from any Group III-compatible fax machine equipped with a touch-tone telephone (either a built-in handset with touch-tone capability or a separate touch-tone telephone plugged into the fax machine's phone jack). After calling MINES FaxBack, the requestor is guided by a series of voice messages that assist the caller in ordering the desired documents. The caller pays for the phone call that also includes the time needed to deliver the requested document to the caller's fax machine.

To access the MINES-FaxBack System, use a touch-tone handset attached to a fax machine or connect a touch-tone telephone to the fax machine's telephone jack and dial (703) 648-4999. Listen to the menu options and select an option using the touch-tone telephone. After completing a selection, press the start button on the fax machine.

The Minerals Information Team also has a page on the World Wide Web detailing its publications, information products, and contacts. To access the page, use Netscape or a similar Web browser. The URL is <http://www.minerals.er.usgs.gov/minerals/>. The page also contains links to other mining-related pages on the Internet.

**FIGURE 1
A TYPICAL SURVEY FORM**

Form 6-1153-A
Nonfer. (5-96)



C73

**UNITED STATES
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY
RESTON, VIRGINIA 20192**

ROLLED ZINC

O.M.B.
Approval not required.

**INDIVIDUAL COMPANY
DATA-PROPRIETARY**

Unless authorization is granted in the section above the signature, the data furnished in this report will be treated in confidence by the Department of the Interior, except that they may be disclosed to Federal defense agencies, or to the Congress upon official request for appropriate purposes.

**FACSIMILE NUMBER
1-800-543-0661**

(Please correct if name or address has changed.)

This form is designed to supplement form 6-1151-MA, Consumption of Slab Zinc, and is applicable to zinc rolling mills only. Please complete and return this form in the enclosed envelope to the U.S. Geological Survey.

This survey is exempt from the requirements of the Paperwork Reduction Act (44 U.S.C. 35) and does not require clearance by O.M.B. If you have any questions concerning this form, please contact the Supervisory Statistical Officer, Mineral Commodities Data Group, U.S. Geological Survey, Department of the Interior, Reston, VA 20192, (703) 648-7960.

1. Location of plant: City or town _____ State _____

2. Zinc consumed in manufacture of rolled zinc.

This is a measure of zinc entering the rolling mill for the first time. Do not include clippings originating from manufacturing finished products (coin blanks, battery cans, etc.) in your own fabricating plant.

Type of Zinc Consumed (1)	Code	Stocks at Plant at Beginning of Year (Gross weight) (Pounds) (2)	Receipts During Year (Gross weight) (Pounds) (3)	Melted or Consumed During Year (Gross weight) (Pounds) (4)	Stocks at Plant at End of Year (Gross weight) (Pounds) (5)
Zinc scrap	301				
Slab zinc	302				
Other (specify) _____	303				

3. Production and stocks of rolled zinc, by type.

Item (1)	Code	Stocks at Plant at Beginning of Year (Gross weight) (Pounds) (2)	(3)	Production During Year (Gross weight) (Pounds) (4)	Stocks at Plant at End of Year (Gross weight) (Pounds) (5)
Strip foil	402				
Rod and wire	405				
Coin alloy	406				
Other (specify) _____	407				
Total	408				

Name of person to be contacted regarding this report			Tel. area code	No.	Ext.
Address	No.	Street	City	State	Zip
May tabulations be published which could indirectly reveal the data reported above? <input type="checkbox"/> (1) Yes <input type="checkbox"/> (2) No					
Signature			Title	Date	