

## **Appendix**

After a 2006 request from the House Armed Services Committee to review U.S. Department of Defense (DOD) policy to dispose of National Defense Stockpile (NDS) materials, a working group reached two conclusions—(1) reconfigure the NDS to be the Strategic Materials Security Program (SMSP), and (2) Modify the Stock Piling Act to grant the SMSP programmatic flexibility to efficiently and effectively acquire the right materials and to ensure essential strategic materials are available to respond to current and future needs and threats. Much of the information required to effectively manage the SMSP will come from monthly canvasses of mineral commodities by the U.S. Geological Survey (USGS).

### **Aluminum**

Aluminum is a strategic and critical material used by all branches of the military, especially the U.S. Air Force, for national defense purposes. The aluminum industry, which is second only to the iron and steel industry among metal industries, plays a major role in the health of the U.S. economy. The USGS is the only source of statistical information on the recovery of aluminum from scrap, which represents approximately 43% of the total domestic aluminum supply and has published this information since 1913. Annual aluminum canvasses do not duplicate information received on a monthly basis and are used to obtain data from small companies that are not canvassed monthly, thus reducing the reporting burden.

U.S. Government agencies rely upon USGS monthly aluminum statistics as their primary source of data on the domestic aluminum industry. Monthly data are needed to assess the impact of long and short-term supply disruptions. Detailed monthly data are used by the Federal Reserve Board (FRB) and others in the computation of gross economic trends. The FRB receives monthly secondary aluminum statistics for use in an economic pricing model. Monthly aluminum data are used by the U.S. Trade Representative in negotiations of multilateral and bilateral trade agreements. The monthly statistics are used to measure and analyze the effects of such agreements on the U.S. industrial base and economy as a whole. The Department of Commerce (DOC) and the International Trade Commission (ITC) need and use monthly data to decide the validity of suits brought by U.S. industry against foreign competitors for unfair trade practices.

Aluminum is an energy-intensive industry. Information from trade associations on primary aluminum does not offer the detailed regional data that are necessary to analyze the impact of legislation and changes in regional power rate structures on the total industry; for example, acid rain legislation, Bonneville Power Administration power rate structures, and endangered species legislation. Detailed regional data also are used by the U.S. Environmental Protection Agency (EPA) to assess the impact of environmental regulations on the domestic industry and its competitiveness in world markets.

These data are used by many State and Federal Government agencies, the Congress, and their consultants to assess the impact of proposed legislation on the aluminum and related industries and on State and regional economics; for example, Resource Conservation and Recovery Act reauthorization and waste minimization.

The World Bank and other financial institutions need detailed monthly data to study trends and to analyze the impact on world and domestic markets for future investments and loans. Quarterly data would mask or hide the seasonal patterns of aluminum and could lead to inaccurate short-term forecasts.

### **Copper**

Copper ranks third in world metal consumption after iron and steel and aluminum; the United

States is the second ranked refined-copper-consuming nation in the world, with about 9% of the world total. The United States, which is also one of the leading suppliers, provides 7% of the world's primary supply of copper and ranks fourth after Chile, China, and Peru in terms of mine production. World copper consumption has risen by about 15% in the past 5 years and is projected to continue to grow at an annual rate of about 3% per year and is largely dependent upon the economic health of the world.

High copper demand is associated with a high standard of living and increased electrical demand. Copper has been in high demand particularly during times of national emergency, such as during World Wars I and II and the Korean and Vietnam conflicts. For example, U.S. refined copper demand doubled within the first year of World War II and grew by 25% within the first year of the Vietnam conflict. Planning for these emergency supply-and-demand dislocations requires timely and accurate data. Copper is classified as a strategic material and has many military and other essential uses during wartime.

Monthly data are required, not only during national emergency planning periods, but as a basis for all types of economic, marketing, and production planning and forecasting during peacetime. Copper markets are notorious for their cyclical periods of surplus ( lower prices) and tight supply (higher prices) that occur seasonally during a given year as well as covering a span of several years and that could be made less severe with more accurate and timely data for planning.

Because of the size of most copper-producing mines, considerable lead time is necessary for production planning. Marketing managers, purchasers, stockbrokers, traders, bankers, and many other businesses, such as equipment and chemical suppliers to the copper industry, base their planning and business successes on frequently spaced, timely statistical production and consumption data. Data collected and published quarterly would reach these planners up to 6 months after the production or consumption had occurred and would present a tremendous gap in knowledge at a critical time. Impacts of specific industry events or Government actions may be masked by the smoothing effect of quarterly data. FRB economic indexes are also based on the data generated by the monthly copper canvasses and serve to guide economic and business planners. The USGS copper specialist is an expert on mineral issues and data that relate to the copper industry. The specialist serves as an advisor to other Government agencies, the Congress, industry, many private organizations, and individuals. The ability to serve in this capacity would be seriously impaired by less frequent reporting.

Copper is a widely traded commodity of international importance. Because of this and the importance of international markets and producers to the United States, the United States has promoted the formation of and is a key participant in an International Copper Study Group, an intergovernmental agency that promotes increased market transparency through improved worldwide data and information. One of the requirements of this organization is monthly statistical data which are deemed necessary by the international community for adequate market transparency, planning, and forecasting.

Copper production canvasses are voluntary, and the high (99% of mine production reported) response rate reflects the importance the industry itself places on these statistics.

## **Gold and Silver**

Gold has played an important role throughout history as an industrial metal and as a medium of exchange. It continues today to maintain a unique status as a long-term store of value. Until only recently, gold served as a monetary standard upon which many world currencies were based. Gold is not primarily a strategic material. Its largest industrial use is its familiar use in jewelry and artistic applications. Gold is also employed in many high-technology applications, especially

in aerospace-defense and electronics where its properties of malleability, ductility, extreme resistance to corrosion, and electrical conductivity are especially useful in sophisticated electronics. In 2010, the United States ranked third, following China and Australia, as a producer of newly mined gold. For the past 20 years or so, gold mining has probably been the most continuously active sector on both the domestic and international mining scene. Mining and exploration companies, which include some companies previously involved in only coal, base metals, industrial minerals, etc., have targeted gold as a primary objective of their activities. This is due, in part, to the strong price performance of gold. Since 1977, the annual average price increased from about \$150 per troy ounce, peaked at \$612 per troy ounce in 1980, and then declined to a level of about \$250 to \$260 per troy ounce in the late-1990s. In early 1980, world political and economic events drove the gold price, at one point, to more than \$850 per ounce. Since 2001, the price of gold has increased steadily because of world economic and political events: by 2011 the gold price was more than \$1,900 per troy ounce. Modern economic practices and theories notwithstanding, many nations, formally or informally, remain clearly convinced of the value of holding at least a part of their reserve assets in gold. The U.S. gold reserve assets at the end of 2010 amounted to approximately 8,140 metric tons. The gross domestic product, of which gold mine production is a critical component, is calculated by the DOC by using monthly gold mine production data.

Silver is a metal that has been important to man for thousands of years. Early man used silver for ornaments and utensils and, like gold, as a substance that could be bartered for other goods and services; this eventually led to the use of these metals as standards for many monetary systems. Although no longer a monetary standard, silver remains an important component of manufactured products critical to various communication, defense, and transportation applications. The United States is the largest silver-consuming nation in the world and ranks among the ten largest silver-producing countries. Although not classified as strategic, silver was one of the materials in the NDS. All of the remaining silver in the NDS was transferred to the U.S. Mint for use in the manufacture of numismatic and bullion coins by yearend 2004. The USGS is the only domestic organization that gathers and publishes monthly U.S. mine production data for gold and silver. The collection of monthly data makes the published data comparable to other Government published statistics, such as imports and exports, and allows a complete and more effective analysis of the gold and silver markets than would be possible by using quarterly data. In addition to the decrease in timeliness, quarterly data would tend to mask seasonal cycles as well as the short-term impacts of gold and silver mining on events that occur within and outside the industry. Publication of monthly gold and silver production may, in fact, help stabilize the market by reducing the uncertainty concerning the quantity and rate at which new material is becoming available.

In addition to their use by investors for gold and silver market analyses, gold and (or) silver production data are used by various Government agencies such as the DOC, DOD, the EPA, the General Services Administration (GSA), the ITC, and the U.S. Mint. These agencies use the data in reports and studies related to their missions. Monthly mine production data are also supplied to the Congress as input for potential legislation and for NDS decisions, and in response to questions from constituents.

## **Lead**

Lead is a commodity of critical and strategic importance. In 2009, about 90% of the lead used domestically went into lead-acid storage batteries and of that quantity, more than 80% went into starting-lighting-ignition (SLI) batteries used in all kinds of air, ground, and water transportation vehicles, which include military vehicles. Lead-acid batteries are also used for uninterruptible

power supply systems for hospitals, banks, mainframe computers, etc., and for standby power for air traffic control, communications, and lighting. Industrial type lead-acid batteries are used for traction power for electric vehicles used for such things as airline ground support equipment and forklifts.

Although the continued availability of primary (newly mined) lead will remain very important, domestic recycling of lead has grown substantially in recent years as dissipative uses have declined. In 2009, secondary (recycled) lead accounted for more than 90% of total refined lead production.

Thus, the canvass “Secondary Smelter and Consumer Report” is needed to follow the flow of scrapped lead material back to the smelter, its reemergence as refined lead and lead alloys, and its fabrication into end products. Canvassing monthly is crucial to successful monitoring of the domestic industry, principally because the use of lead is tied so strongly to the SLI storage battery, the life of which is to a large degree dependent on the vagaries of weather and climate. Monthly data are needed to support the best near-term forecasts made by the USGS in its advisory capacity to industry, domestic and international financial institutions, and such agencies of the Federal Government as the DOD, the ITC, the Office of the United States Trade Representative, the FRB, the International Trade Administration of the DOC, and the EPA.

Worldwide lead statistics are compiled and analyzed on a monthly basis through cooperation among governments of the industrialized countries and, in particular, through the agency of the International Lead and Zinc Study Group (ILZSG), in which the United States Government participates. Because the United States produced, in 2009, about 14% of the world’s refined lead and also consumed about 15% of the world’s refined production, U.S. monthly statistics are an important factor in maintaining “transparency” of the international statistics and markets.

## **Tin**

Tin is a strategic and critical material used by all branches of the military for national defense purposes. The importance of tin to our defense posture was recognized from the earliest days of the U.S. government stockpile in the 1940s. Tin has generally been the largest dollar volume holding in the NDS until a few years ago, an indication of tin’s importance to our Nation’s military. Although the NDS inventory of tin has dwindled to a modest quantity in recent years, the DOD still needs the monthly tin information that the USGS compiles to follow trends in the supply and demand for tin to help determine emerging new programs to meet DOD’s needs. Tin plays a major role in the vitality of the U.S. economy. It is a vital component of products that range from food, pet food, and general line cans (as tinplate); to televisions, radios, computers, and cars (as tin solders for electronics); to toothpaste and wood preservatives (as tin chemicals); to naval ship components, gears, and bearings (as bronze); to flat glass for house, office, and car windows. The USGS is the only source of statistical information on domestic tin consumption and production. Annual tin canvasses do not duplicate information received on a monthly basis and are used to obtain data from small firms, which are not canvassed monthly, thus reducing the reporting burden.

U.S. Government agencies depend upon USGS monthly tin statistics as their only source of data on the domestic usage of tin. Some uses of tin, such as tinplate, which is used mostly during the summer food-packing season, are highly seasonal, and monthly canvass data must be used to identify and interpret those patterns.

Tin is a widely traded commodity of international importance. It is mined in about 35 countries and is smelted in about 30 countries. It is one of a select few metals traded on the London Metal Exchange. Secondary production and consumption of tin are now increasingly important. As

municipal collection and recycling programs for used tin cans increase (to eliminate costly landfilling), the USGS tin scrap and detinning canvass statistics are increasingly important.

## **Zinc**

Zinc is the fourth most widely used metal in the world. The United States consumes about 10% of world zinc production. It is used mainly for corrosion protection of iron and steel, as die cast metal, as a major component in brass and bronze, and as a necessary additive to produce rubber products. Because of its widespread use, zinc is a strategic and critical material essential for most national defense purposes. As such, zinc is a major item stored in the NDS.

Monthly data are collected on this essential metal to provide the timely, near-term data necessary for all types of economic, marketing, and production planning and forecasting analyses by Government, industry, academia, and the public. Monthly zinc data are used to analyze aspects of international trade and trade practices, investment in new mines and smelters, EPA decisions, industry health, and stockpile decisions. FRB economic indexes, such as monthly capacity utilization of the Nation's mines and smelters, use monthly zinc data for that calculation. Much of the available domestic data on zinc, which is consumption by end use, mine and smelter production, and secondary processing, are collected and disseminated only by the USGS. A study on users, which included personnel in other Government agencies, industry, investment banks, etc., of zinc data disseminated by the USGS found that the data published monthly was by far the most useful and important for their purposes.

If data were collected and published only quarterly, then they would reach planners up to 6 months after the production or consumption had occurred and would present a tremendous gap in knowledge at a critical time. Impacts of specific Government actions or industry events may be masked by the smoothing effect of quarterly data.

The USGS specialist also serves as an advisor to other Government agencies, the Congress, industry, and many private organizations and individuals on mineral issues and data relating to the zinc industry. The ability to serve in this capacity would be seriously impaired by less frequent knowledge of basic information, such as that collected monthly.

The U.S. Government is a member of the ILZSG. As part of this membership, the Government is obligated to supply the ILZSG with timely monthly data on U.S. production and consumption of zinc. Also, twice a year, members of the ILZSG provide forecasts of their mine and smelter production and consumption for the current and following year. Monthly data are more timely and permit the Government to make more accurate forecasts.