COMMODITY-GRADE MERCURY STAKEHOLDER MEETING MINUTES

Meeting 1: May 8, 2007

Topic: Supply and Demand

ASAE & The Center for Association Leadership at the Marriott Learning Complex
Ronald Reagan Building and International Trade Center
Washington, DC

KICKOFF AND WELCOME

Mr. Jim Gulliford, Assistant Administrator, EPA's Office of Prevention, Pesticides and Toxic Substances (OPPTS) welcomed stakeholder participants, Federal experts from various Federal agencies, and members of the public to the kickoff meeting of the Stakeholder Panel for Managing Domestic Stocks of Commodity-Grade Mercury. This meeting was the first in a series of meetings designed to provide individual stakeholder input to the U.S. government on options for managing non-federal stocks of commodity-grade mercury.

INTRODUCTIONS

Ms. Rose Salton, a contractor with BLH Technologies, Inc., working for EPA, facilitated the meeting and led the introductions of the stakeholder participants and Federal advisors. Stakeholder participants included stakeholders from academia, non-governmental organizations, industry, and State governments. The Federal advisors were from the Department of Commerce, Department of Energy, Defense Logistics Agency, U.S. Geological Survey, Office of the U.S. Trade Representative, and the Environmental Protection Agency. The meeting was open to the public and 13 members of the public attended the meeting.

Following the introductions, Ms. Salton explained the meeting process and ground rules for the day's discussion, including the reminder that these meetings are arranged to obtain individual stakeholder advice rather than group or collective advice. Ms. Salton then reviewed tentative and alternative dates for future meetings. The tentative dates were determined to be as follows:

- Meeting 2 – ~~June 13~~, Washington, DC ***(meeting is now scheduled for June 14)***
- Meeting 3 (two day meeting) – TBD ***(meetings are now scheduled for July 24 and 25 in Denver, CO)***
- Meeting 4 – September 20, Washington, DC

At the conclusion of these meetings, EPA will prepare a report summarizing the issues and options for the management of non-federal commodity-grade mercury, as provided by the individual participants at meetings and from written comments submitted to the public docket on this issue. This report will provide options for the management of non-federal commodity-grade mercury to a Federal interagency group working on mercury.

OVERVIEW AND CHARGE DISCUSSION

Ms. Wendy Cleland-Hamnett from EPA's Office of Pollution Prevention and Toxics reiterated the focus of the meeting and noted the topics of discussion for future meetings: sources of mercury, management options, and storage issues. She followed with an overview of the meeting's background paper and charge. The charge to stakeholder participants is to consider:

- How should various non-federal stocks of mercury be managed both in the short-term and long-term?
- How do current and future supply and demand affect this determination for each of the various stocks?

When thinking about potential recommendations for managing mercury, Ms. Cleland-Hamnett urged participants to consider a number of factors and mercury management options highlighted in the background paper, such as environmental and health protection, economic and liability implications, feasibility, and regulatory implications.

Following Ms. Cleland-Hamnett's presentation, a participant requested that EPA include as part of the agenda for the next meeting information about the Bevill status of the by-product production of mercury from mining, noting that it has an impact on management options. Ms. Cleland-Hamnett noted that EPA hopes to have a body of information to augment its current work to send to the Federal interagency group and anticipates that any information derived from the panel meetings will aid in working together at the Federal level to determine these issues.

PRESENTATIONS – MARIA DOA, PH.D., EPA, OFFICE OF POLLUTION PREVENTION AND TOXICS

Dr. Maria Doa from EPA's Office of Pollution Prevention and Toxics made three presentations to the stakeholders: 1) Commodity-Grade Mercury: U.S. Supply, Demand and Reduction; 2) Commodity-Grade Mercury: Global Supply, Demand, and Movement; and 3) Commodity-Grade Mercury: Current International Context. All of these presentations are available in the public docket and on EPA's mercury website.

Commodity-Grade Mercury: U.S. Supply, Demand and Reduction

Most of the data in the first presentation came from a compilation of sources cited within *EPA's Roadmap for Mercury*. The presentation addressed the reductions in U.S. mercury demand, existing U.S. products and process demand, sources of U.S. supply, and U.S. efforts to address mercury supplies.

At one point during Dr. Doa's presentation, one of the stakeholder participants stated that the amount of by-product mercury from gold mining in Nevada is known and asked whether there are estimates of information on other mines such as copper or zinc mines. She responded that there was not, but encouraged other participants who may have this data to share it during the stakeholder discussion period.

Later in the discussion there was a question as to whether there was an estimate of how much mercury is recycled on a product-specific basis. A stakeholder participant responded that there is no tracking of mercury on any of these kinds of product lines. Recyclers may have estimates of what they have recycled but the totals are not always precise.

Commodity-Grade Mercury: Global Supply, Demand, and Movement

Dr. Doa's second presentation addressed global supply and demand, movements and trends, and difficulties in analysis. Dr. Doa noted that the source of the information is from the 2006 United Nations Environment Program (UNEP) report by Peter Maxson, who has done a lot of work internationally for the European Commission (EC) and for UNEP in the area of global supply, demand, movement, and trends. There are concerns about the accuracy of the data but they are still useful in providing a broad picture of the global movement of mercury.

At the conclusion of the presentation, one participant questioned information in Dr. Doa's presentation that indicated that the amount of mercury that mines recover as by-product is driven by mercury market forces and that when demand is low, less mercury is recovered. The participant stated that in industrial gold mining, the recovery of mercury is not driven by the market for mercury, but rather is a result of air pollution control activities due to air emission regulations and the industry's commitment to air pollution control.

Another participant inquired about issues related to mercury from the oil and gas industry. EPA will attempt to provide more information regarding this issue at the next meeting.

Participants also discussed why the price for commodity-grade mercury has increased so dramatically. Some participants attributed the cause to the sudden reduction of supply, primarily from the shutting down of mercury mining in Spain and Algeria, the effects of the U.S. not selling mercury, and the sudden increase in demand from China. Other participants disagreed that increased demand from China affects the global price of mercury because China is sensitive to the high price and it caps mercury imports. One participant noted that China has increased domestic mercury production in parallel with its increased demand. This participant thinks speculation in advance of the EU ban on mercury might be a cause of the price increase. This suggestion was countered by another participant who believes that if even if speculation did occur, it wouldn't last more than 6 months. Finally, one participant expressed the view that the use of mercury for artisanal and small scale mining is not sensitive to price.

The discussion then focused on the question of whether changing supply, demand, and price could lead to new or renewed primary mercury mining around the world. One participant stated that mining company members of the International Council on Mining and Metals (ICMM), though they do not mine mercury as a primary product, have as part of their position regarding the global mercury issue, committed to not open any primary mercury mines. A different participant agreed, saying high mercury prices would not lead major mining companies around the world to undertake mercury extraction because to those companies, mercury is a problem. But this participant thought that small mines might be tempted to mine mercury if the price is high enough.

Commodity-Grade Mercury: Current International Context

The last presentation addressed the current international context as it relates to commodity-grade mercury and focused on the partnership efforts to reduce global mercury demand; European Commission actions, such as the proposed legislation to ban exports of mercury and store excess mercury; and the 2007 UNEP Governing Council decision earlier this year.

STAKEHOLDER PARTICIPANT DISCUSSION

Ms. Salton led the stakeholder participant discussion, asking a series of questions about the supply and demand of mercury.

What level of demand is anticipated in the short-term (over the next 2 to 3 years) and long-term (10 to 15 years and beyond)?

- U.S. domestic demand will be significantly lower in the areas of switches and relays and measuring devices as State legislation takes effect. There are a good number of states that restrict sales of measuring devices and switches and relays and other States are considering similar legislation. The U.S. will reach a tipping point in the not too distant future, as Honeywell reached when it decided to stop manufacturing thermostats with mercury switches. There will be some small mercury uses that will have exemptions and will continue. So, if our current demand is in the 200 ton area in the private sector, it's going to be much lower than that by 2010. - *Participant from a non-governmental organization*
- We need better data than the 2001 data to answer this question. EPA needs to provide present numbers and projections (other than the data from 2001) to get proper feedback. – *Participant from a non-governmental organization*
- From 2001 to 2007 there was a reduction of 70 tons; this probably will go down to 100 to 150 tons. - *Participant from academia*
- The U.S. is consuming about 100 tons right now. It is artificial to isolate the U.S. market. Mercury is a very small volume commodity in an international market. Mercury that we obtain comes from all over the world and is shipped all over the world, specifically China. - *Participant from industry*
- In theory, data on commodity mercury use is compiled and submitted every 3 years to a clearinghouse in the northeast. This is hard data, and all manufacturers who sell in the U.S. are making a public declaration of all units of mercury they sell. -*Participant from industry*
- Mercury can't be accurately tracked; data is either voluntary or taken directly from the census bureau. Until there is legislation or industry-wide voluntary reporting, the data will always be imprecise.
- The pie charts in the presentation that represent mercury use in the chlor-alkali industry are confusing in how they are presented. There is a net supply of mercury in this industry. The U.S. will soon be down to five chlor-alkali plants, and we don't know the life of these plants. A chart is needed to represent the net supply and demand of mercury in this industry. - *Participant from industry*
- The estimate of 100 ton consumption of mercury in the U.S. (mentioned above) does not include mercury provided by closed mercury cell chlor-alkali plants. - *Participant from industry*
- The chlor-alkali industry is currently compiling current (2006) data regarding the use of mercury. The net supply will be less than 10 tons, but this use excludes any supply of mercury from closed facilities. - *Participant from industry*
- Although there are no recent data on mercury demand, current demand is significantly reduced from 2001. The cumulative demand from the five chlor-alkali facilities and for mercury products will be lower, with a maximum likely demand of 100 tons and probably significantly less. Since the USA routinely produces between 180 and 200 tons of mercury annually, and this amount is likely to rise as by-product production and recycling increase, it

is a fair assumption that the U.S. will be a significant net supplier in the global marketplace. This has probably been true for the past 3 to 5 years. - *Participant from a non-governmental organization*
- NEWMOA is a source of data. - *Participant from a non-governmental organization*

Are there additional sources of data or information that would provide a more complete picture of supply and demand than presented in the background paper or the presentations given today?

- By-product mercury out of gold, copper, and zinc mining and smelting should be reported. - *Participant from academia*
- In northeastern Minnesota, iron ore processing is a fairly significant emitter of mercury. The Lake Superior Binational Forum has identified this industry as an air source of mercury to Lake Superior. - *Participant from a non-governmental organization*
- NEWMOA is a source of data. - *Participant from a non-governmental organization*
- This question highlights the problem. We are forced to rely on imperfect data because mercury data is not routinely reported. A recommendation to national policymakers is to develop (and legislate) a reporting system. Mercury is a pollutant and no matter what trade recommendations are made it will necessitate that there be a feedback loop to address unanticipated consequences. The reporting system would not require a lot of entities to provide the data. It should be collected where mercury is being aggregated: at the trader level and at the highest manufacturing level. It would not be a huge paperwork issue. *– Participant from a non-governmental organization*
- One company imports mercury from South America because we have better stewardship and control. These imports need to be included in the supply estimates. - *Participant from industry*
- Data related to oil and gas production in the U.S. and liquefied natural gas is needed. Recommend that EPA and the Federal government figure out how to collect data in terms of supply and what is contained in products. Need a better data source than what is in the report. - *Participant from a State organization*
- Data for mercury by-product management shows that mines sell mercury to recyclers. This process needs to be carefully managed to ensure that the import and export of mercury is handled properly and not put in the control of people who will pollute the environment. This should be the main goal. - *Participant from academia*

Should particular supplies be used preferentially to meet the continuing domestic demand? Why should some supplies be used over others? Which supplies should be used preferentially?

- The industrial mining sector produces elemental mercury as the direct result of air pollution control activities. This is a preferred source. - *Participant from industry*
- From the environmental perspective, recyclers should be looked at first as a preferred source. - *Participant from academia*
- Why is this question relevant? Mercury is mercury; it's all the same. We need to look at it as a national policy. It's the surplus that needs to be managed. It's a single commodity. - P*articipant from industry*
- Reclamation and recycling should be preferred. Recyclers produce different grades of mercury (e.g., high grade to low grade). The difference in grade often is the difference in price. When you look at it in the aggregate it would be very difficult to say the 150,000

pounds a year I might reclaim should have first priority over what the Pioneer plant coming off line down in Lake St. Charles that just last week announced that they're going to sell 900,000 pounds in the next 18 months or year. I don't know how you segregate those out, if the current chlor-alkali industry can't sort that out. - *Participant from industry*

- This question is difficult to answer because it has no context. What's going to happen to the other mercury? It presupposes other policies are in place. How much mercury do we really need to service the domestic need? What will be enough? Theoretically, maybe there is a way to develop a preferential structure; but, practically, it depends on a variety of factors, such as: when you do it, what's the system, what's the management chain, is there one person in charge, and whether it is a private-sector storage facility. Once you figure out how you are doing it, then you ask this question. - *Participant from a non-governmental organization*
- You want to have mercury recycling and mercury capture of by-product. Whatever is done, there has to be some incentive that will be good environmentally and economically. - *Participant from academia*
- Mercury is an international commodity. Every bit of mercury that is recovered from a by-product will replace mercury that has been mined from a virgin mercury mine. - *Participant from industry*
- A participant asked whether the stakeholder participants would have an opportunity to revisit this question or others at future meetings. It was communicated that there will be continued opportunities for participants to submit responses and information to EPA. However, the future meetings will not be the forum to address past questions, since there will be new topics for discussion at these meetings. The participant recommended that EPA allot time to address past questions and noted that the assumptions of many of the questions posed do not allow for the data needed to respond to them. - *Participant from a non-governmental organization*
- The discussion returned to the question of whether pulling U.S. mercury off the international market would cause an increase in primary mercury mining. One comment was that the U.S. contribution to the global market is too small to increase mining. - *Participant from a non-governmental organization.* Another participant agreed, saying it would probably have little effect if all the American mercury was pulled out of international commerce.

How do current and future supply and demand affect options for management of various stocks? What level of supply is needed to meet current demand?

- Similar to recycling, mercury by-product from the mining sector is seen as indefinite, unlike mercury from the chlor-alkali industry. - *Participant from industry*

What would the effect in the U.S. of a reduction in supply?

- The U.S. would be able to take care of itself. In the near, medium, and long-terms, we will be fine. - *Participant from academia*

For future demand, are demand projections concrete enough to inform management options? Could an unexpected shift in demand present itself and how would it affect management options? What sort of flexibility is needed?

- It is unlikely that demand will go up. No one is looking at major industrial processes of using mercury anymore. It will probably be a diminishing market globally. By-product

mercury will stabilize and mercury production will be up due to the continuing use of recycling, but mercury usage will go down. - *Participant from academia*

- We have a surplus of mercury now; the current stockpile is huge. The focus needs to be on what we do with this excess supply. - *Participant from industry*
- It is more likely that we will not see any sort of blip in the demand even if there was a new technological development that would use non-toxic mercury in its usage. - *Participant from a State*
- All sources of mercury are being ramped down. The dental industry, for example, has found alternatives to its uses of mercury. The challenge is what we do with the excess supply. - *Participant from a non-governmental organization*
- Mercury is a small commodity both domestically and internationally, which does not take up a lot of space. Unlike many other commodities, mercury can be controlled. We shouldn't spend a lot of time worrying about this. The U.S. has enough mercury if it is needed. Trade controls would not significantly affect the international market. - *Participant from a non-governmental organization*

Based on the discussion, it's clear that there is a surplus. How do you feel the surplus should be addressed given the global context?

- We should be cognizant of what the European Union is doing and take similar action, such as restricting exports. We must create a mechanism for storing mercury here at home, and consider questions of how it is stored and the financial relationship needed to store it. The major policy outcome should be–just as DOE and DOD have realized–that mercury should be kept here. When mercury leaves our country, the chances are great that it will end up going to a developing country that will manage it in a way that pollutes the global world.- *Participant from a non-governmental organization*
- The problem that the chlor-alkali industry faces is that it is very easy to ban exports of mercury and then it comes down to what are we going to do with it and no one wants to do anything. Any export ban must be predicated on a defined policy of what is going to happen to the mercury and who is going to control it. These aren't difficult issues, although they do require a lot of discussion. This must be resolved before an export ban. - *Participant from industry*
- The efficient thing to do is collectively buy mercury off the open market and sequester it because, mercury is mercury and it's going into the world system. Rather than an export ban, the efficient thing to do is to collectively purchase mercury on the market and sequester it. - *Participant from academia*
- All mercury is not equal. There is a strong preference for Spanish mercury for artisanal mining. The price for Spanish mercury is $60 vs. $35 for U.S. mercury. The big money goes for Spanish mercury.
- The U.S. could buy the cheapest mercury to get it out of the environment. - *Participant from academia*
- The toxicity of mercury does not determine the price of mercury; getting gold does. If Spanish mercury is seen as doing that, the money will be spent for it.
- The demand for mercury is inelastic. The U.S. won't be able to control the demand for mercury used in artisanal gold mining. The U.S. needs to address what the U.S. policy will be. The U.S. will not be able to buy all of the mercury available in the world. - *Participant from industry*

- An export ban will have the same effect as buying mercury. The only difference is that it is likely to drive up price in foreign markets relative to the domestic market. This is not a good idea. If the price of mercury is high enough it will be extracted outside of our borders. - *Participant from academia*
- If we are to take mercury off the market (domestic supply) and have a clearinghouse, the U.S. would need to determine who would be a legitimate user of the mercury. The U.S. government shouldn't be in the position of making these decisions. - *Participant from industry*
- In terms of the export ban, we must get the order correct. We need a viable solution for what happens to the excess mercury before any kind of ban goes into effect. We should keep open the avenue of exploring not just storage but other potential ways to handle it as well. There has been some work done by EPA that found that stabilization is not a viable treatment technology, but I think that in light of where we are today it makes sense to keep that option on the table. - *Participant from industry*
- There needs to be a storage option or some avenue for removing mercury and identifying a destination of where this mercury can go. DOD has a process that involves storing a large quantity of mercury in a secure location. We need to explore the range of options in the short and long term. If we have an export ban bill in Congress and that starts moving, we're doing it right. Buying mercury is interesting but where will we get the money? If there are security questions to storing mercury, we need DOD to tell us. We need this information. - *Participant from a non-governmental organization*
- It is unknown what Kyrgyzstan's response to more mercury on the market would be, but China's response to available mercury on the world market was to buy it. In the last 10 years, China averaged 500 tons a year of virgin mercury mine production, which is analogous to the current DOD/DOE stockpile of 5,000 tons. If the DOD stockpile had been sold in the last 10 years, there would be no question of what to do with the mercury stockpile and there wouldn't have been 500 tons of mercury mined in China and its associated pollution caused by that activity. - *Participant from industry*

At this point in the discussion, Dr. Doa acknowledged that several participants indicated a need for mercury to be stored and specifically that the government should do the storing. However, she urged participants to consider the charge to suggest options other than the Federal government stockpiling mercury. Responses were as follows:

- It is doubtful that there is another party who would want to take on mercury without getting paid for it. - *Participant from academia*
- It's a public good to have mercury sequestered and a public liability to have it in the environment. - *Participant from a non-governmental organization*
- An alternative to an export ban would be to buy the mercury and sequester it. - *Participant from academia*
- There are significant costs not just to our society but other societies when we export mercury. We are creating dead zones all over the planet when we continue to export mercury out of the country. When we talk about costs, we need to factor in contamination costs, the cost of cleaning contaminated sites, and total lifecycle costs. - *Participant from a non-governmental organization*

- Contamination costs need to be included as economic costs. We can reduce a certain number of tons of mercury either efficiently or inefficiently, but an export ban is inefficient. - *Participant from academia*
- An efficient way of collecting revenue would be to levy an excise tax on the users of mercury and use the revenue to buy the surplus. - *Participant from a non-governmental organization*
- The use tax could be assessed for new streams but not for past use. Most of the costs would be due to past uses. - *Participant from industry*
- There is precedent for private/public partnerships. The U.S. Enrichment Corporation buys government stocks of high and low radioactive materials and puts them in long-time storage. A similar entity could be conceived with mercury. - *Participant from industry*
- What would be the drawbacks to giving the current supply to China in an effort to deter them from continuing to mine mercury? - *Participant from academia*
- China is using mercury to manufacture vinyl chloride monomer; do we want to supply China with mercury so they can perpetuate an outdated technology? They should be encouraged to move into another direction. - *Participant from a non-governmental organization*
- It would be interesting to see how a public/private partnership in storing mercury could work. - *Participant from a non-governmental organization*
- A current example of a government/contractor operated facility is the Hawthorne facility in Nevada. Non-federal mercury could be stored at the Hawthorne facility in Nevada, but with different financing arrangements. The private stockpiles could be housed adjacent to the government stocks. - *Participant from a non-governmental organization*
- The important questions to consider are who is paying and what the relationship is. - *Participant from academia*
- It would be useful to have a mockup project in mind to consider the balance of the operating cost of the storage facility and the price of the mercury that will be stored. - *Participant from academia*
- There is a need to address price of storage and the environmental concern. - *Participant from academia*
- The government is reluctant to discuss the issue of contaminated sites. One reason is that the economics aren't conducive to weighing the cost benefits. The developed world does not want to look at the contaminated sites in the developing world, because in some cases the developed countries are the cause. - *Participant from a non-governmental organization*
- The U.S. government should look at other aspects of storage and supply. The U.S. government should try to work with the government of Kyrgyzstan to close their mining operations. The only U.S. military base in Asia is there. 500 metric tons of mercury per year comes from the Kyrgyzstan mine. It should be national policy to decrease global supply and the Kyrgz Republic mine should be the first priority. - *Participant from a non-governmental organization.*
- Participants expressed interest in attending a site visit to a mercury storage facility during one of the future panel meetings. The Hawthorne facility in Nevada and the Somerville facility in New Jersey were mentioned as possible sites.

PUBLIC COMMENTS

At 3:15 p.m. the stakeholder participant discussion paused to allow for public comment. There were no public comments received by phone. However, two members of the public present at the meeting made comments.

- Ray Graczyk, President of Northeast Lamp Recycling, requested that EPA consider the financial impact to future recycling before banning exports of mercury. Considering the legislation that has been passed and the universal waste law that was promulgated to encourage the recycling of mercury-containing lamps, banning exports will have a devastating impact on the entire recycling industry. It will increase the price of recycling, thereby impacting all the past work and effort that was done to encourage people to recycle.
- Phillip Ditter, Environmental Health and Safety Manager for the Electronics Recycling Branch of Veolia Environmental Services, spoke of the increased demand for recycling services of products containing mercury waste from a lamp recyclers perspective. A number of states have adopted legislation that mandates the recycling of lamps. He noted that as demand goes up, if there is no outlet for the recycled mercury law, it creates problems for recycling facilities. His company has four RCRA permitted facilities. If the company didn't have an outlet for recovered mercury it would have to be kept onsite and the facility couldn't be closed. There are a number of RCRA issues associated with this. Without an outlet, accumulation issues would cause a permitting change. Recyclers don't have a source to sell that mercury.

ADJOURN

At the conclusion of the meeting, Ms. Cleland-Hamnett urged participants, prior to the upcoming panel meetings, to submit questions they would like to discuss and their interest in providing presentations at future meetings. She also noted that interim minutes would be provided before the next meeting. Participants expressed interest in inviting other agencies, particularly DOD and DOE, to present information regarding their mercury storage efforts.

The meeting adjourned at approximately 4:15 p.m.