US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

COMMODITY-GRADE MERCURY STAKEHOLDER MEETING MINUTES

Meeting 2: June 14, 2007

Topic: Regulatory Issues and Storage – Part I

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

WELCOME

Ms. Wendy Cleland-Hamnett from EPA's Office of Pollution Prevention and Toxics welcomed stakeholder participants, Federal advisors, and members of the public. This is the second 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.

The first meeting, which addressed mercury supply and demand, was held on May 8, 2007 in Washington, DC. The agenda and minutes of the meeting are posted on the EPA website at www.epa.gov/mercury/stocks and also in the public docket (EPA-HQ-OPPT-2007-0148).

INTRODUCTIONS AND MEETING PROCESS

Ms. Sheila Canavan from EPA's Office of Pollution Prevention and Toxics facilitated the meeting and led the introductions of the stakeholder participants, Federal advisors, and representatives of the public. Stakeholder participants included individuals from academia, non-governmental organizations, industry, and State governments. The Federal advisors included representatives from the U.S. Geological Survey, Defense Logistics Agency, Department of Commerce, Office of the U.S. Trade Representative, Department of Energy, and the Environmental Protection Agency. Members of the public also introduced themselves.

Ms. Canavan explained the meeting process and ground rules for the day's discussion, and reminded the stakeholders of their charge, which is to consider these questions:

- 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?

The scheduled dates for future meetings were determined to be as follows:

- Meeting 3 – July 24 and 25, Denver, Colorado
- Meeting 4 – September 20, Washington, DC

REGULATORY ISSUES FOR MERCURY WASTE AND COMMODITY MERCURY

Mr. James Berlow from EPA's Office of Solid Waste, Hazardous Waste Minimization and Management Division, gave a presentation entitled, "RCRA: Mercury Waste and Commodity Mercury," to address questions raised at the first Commodity-Grade Mercury Stakeholder Meeting. The presentation provided an overview of RCRA regulatory issues relating to mercury waste, including the Universal Waste Rule and the Bevill exemption from hazardous waste regulation; results of EPA research on treatment and disposal of mercury wastes; and issues related to long-term storage.

During Mr. Berlow's presentation on RCRA regulatory issues, particularly regarding the Bevill exemption, panelists discussed the following:

- *Participant from academia* – Does EPA have the authority to redefine what is Bevill-exempt and what is not? There is a mobilized form of mercury waste in some Nevadan mines that could be considered an imminent danger to the groundwater system and therefore should not be exempt from regulation. There are about 20 to 30 tons of high-toxicity, low-volume waste.
- *Participant from EPA* – Although EPA has the authority to redefine what is Bevill-exempt, EPA has no plans to do so at this time.
- *Participant from a non-governmental organization* – When EPA made its Bevill determination on mining wastes in 1984, the air pollution control technologies now generating byproduct mercury were likely not installed then, so its unlikely EPA even considered these processes as part of it Bevill analysis.
- Which of these processes are Bevill-protected: roasters, carbon kilns, retorts, and thermal processes? What are the waste volumes from these processes, and would they be above the standard that defines them as hazardous?
- *Participant from EPA* – We don't believe there are significant amounts of mercury byproduct from mining that are Bevill-exempt. [Note: EPA has re-examined this issue and found this initial assessment to be incorrect. See the notes from the Denver Commodity-Mercury meeting from July 24-25, 2007.]
- *Participant from industry* – Has EPA reviewed treatment standards related to debris? There are reports that debris standards are not being consistently applied. This is diverting a large waste stream from reclamation.
- *Participant from EPA* – We checked into what the States are doing. We found no evidence of significant quantities of waste avoiding treatment. EPA believes the current system is operating effectively.
- *Participant from academia* – Will there be significant quantities of mercury from new air pollution controls on coal-fired power plants?
- *Participant from EPA* – Not aware of any significant stream to be dealt with. He will research this issue further.

During Mr. Berlow's presentation on treatment and disposal of mercury wastes, Mr. Berlow was asked about the option of treating mercury waste and disposing it.

- *Participant from EPA* - EPA and the States looked at options to treat mercury waste so it could be disposed. This was in support of the Defense Logistics Agency process. They looked at all possible methods, including high-tech methods. None would be adequate

US EPA ARCHIVE DOCUMENT

for waste that was going to be landfilled with other waste because treated mercury is very sensitive to pH and salinity. They found that conditions had to be just right to meet the universal treatment standards, and huge amounts of stabilizing material were needed.

- *Participant from industry* – One company is currently conducting experiments in mercury stabilization technology for the purpose of sequestration and asked whether EPA would consider this technology for stabilization. There are problems using the pH test developed by the EPA Office of Research and Development. If we can pass that series of tests, would the technique be approved?
- *Participant from EPA* – Any new technology would need to be evaluated. It is possible to change the standard by rulemaking.
- *Participant from industry* - We would like to have guidelines.
- *Participant from EPA* - In general, we have tried to rely on stabilization technologies that do not expand the waste volume by more than about 200%.
- *Participant from industry* – You can treat it and send it to Canada for landfilling, but it doesn't meet the U.S. standards.
- *Participant from a state organization* – From an environmental perspective, States would be concerned with volatilization during the stabilization process.
- *Participant from industry* – Volatilization has to do with vapor. We're turning it into something with no vapor.
- *Participant from industry* – I want to clarify that high concentration mercury is 260 ppm.
- *Participant from industry* – Elaborate on why the 2000 or 1999 treatment options study was not sufficient.
- *Participant from EPA* – EPA said the technology works, but only in site specific conditions.
- *Participant from industry* – The Bevill Amendment and the debris loophole need to be considered.
- *Participant from a non-governmental organization* – Is EPA continuing to evaluate stabilization technologies?
- *Participant from EPA* –Currently EPA is not exploring alternative stabilization technologies for mercury waste. The Agency did an exhaustive study including experimental approaches. EPA has found that storing mercury in buildings, like what is currently being done by DOD's Defense Logistics Agency, is the optimal management. It is effective and less expensive.
- *Participant from a non-governmental organization* – What about the decision by Sweden, that excess mercury should be placed in salt mines?
- *Participant from EPA* - It's the same process as DLA's, only a different location.

During Mr. Berlow's presentation on issues related to long-term storage of mercury, panelists discussed the following:

- *Participant from a non-governmental organization* – If the Federal government came out with a policy that restricted the sale of mercury and ordered it to be put in storage indefinitely, would a RCRA permit be required?
- *Participant from EPA* – Speaking for himself and not EPA, he thinks it is likely that a RCRA permit would be required if the facility says the storage is permanent. If it's permanent storage, that means disposal.

US EPA ARCHIVE DOCUMENT

- *Participant from industry* – Would the Land Disposal Restrictions have to change?
- *Participant from EPA* – No. If the mercury is not elemental mercury, it would need to be retorted into elemental mercury; however, if it is elemental mercury it would meet the standard and could be put in a hazardous waste disposal facility that is permitted to accept this particular type of waste.
- *Participant from a non-governmental organization* – The mercury storage facilities of the Departments of Defense and Energy do not have RCRA storage permits because even though they have pledged to store the mercury for 40 years, they have left open the possibility of making the mercury available on the market in the future.
- *Participant from EPA* – They have a commodity and it's considered temporary storage. No permit is needed.

PRESENTATION ON FEDERAL MERCURY STORAGE

Dennis Lynch, Department of Defense, Defense Logistics Agency

- Mr. Dennis Lynch presented information on the current storage of mercury stockpiles in 4 locations by the Defense Logistics Agency and the decision to centralize the storage.

During this presentation, participants discussed the following issues related to the mercury storage facilities:

- *Participant from industry* – What is the absorbent material?
- *Participant from DLA* – It's specifically designed to absorb mercury.
- *Participant from a non-governmental organization* – What is the size of the storage facilities?
- *Participant from DLA* – Each storage building is 10,000 square feet. There are 14 buildings for a total of 140,000 square feet of warehouse space.
- *Participant from a non-governmental organization* – Is DOD using all of the existing facilities? Are some of the facilities available for non-DOD use?
- *Participant from DLA* – There are some existing facilities available but the Commander at Hawthorne would know whether any of them are available for non-DOD use.
- *Participant from academia* – Will the mercury stored in the facilities continue to be stored in the 76 lb. steel flasks inside the over-packed drums, or are there plans to move them to containers that hold 1 metric ton? Have any of the mercury storage containers leaked, and what are the expectations of volatilization and loss?
- *Participant from DLA* – The current method of storing the mercury in the 76 lb. steel flasks has been found to be safe and also more cost-effective than the alternate option. DOD has no plans to change the current storage method. DOD's environmental impact statement estimated that 1% of the flasks (120) may leak. We will open the drums in the 40th year of storage to check for leaks.
- *Participant from academia* – The air concentrations in the storage areas were higher before the repackaging.
- *Participant from academia* – Are the warehouses climate controlled? It will get hot in the warehouses in Nevada.
- *Participant from DLA* – The mercury storage facilities are not climate-controlled. The study indicated more mercury would be emitted to the air from generating the electricity needed to run the air conditioners than if the storage area got too hot.

US EPA ARCHIVE DOCUMENT

- *Participant from a non-governmental organization* – The annual costs for storing the mercury appear to be low and as a result should not significantly affect the price of recycling.
- *Participant from industry* – Do the costs include monitoring?
- *Participant from DLA* – Yes.
- *Participant from industry* – Do the costs include preparation of the facility?
- *Participant from DLA* – I'm not sure. I will follow up in Denver.
- *Participant from academia* – From the recyclers' perspective the mercury storage costs are not fully captured here. For example, if there's a positive value for the mercury, recyclers will have an incentive to recover the mercury, but if there is no positive value for mercury and it can't be sold or must be stored in a mercury storage facility, there is no incentive to recover the mercury.
- *Participant from industry* – Can a private company store mercury on its own property as long as there is potential to sell it?
- *Participant from EPA* – Yes, The mercury is considered a commodity as long as there is a potential market.
- *Participant from industry* – EPA may look the other way for DOD but not sure about private stockpiles.
- *Participant from academia* – Did DOD ever consider storing non-DOD mercury?
- *Participant from DLA* – The Environmental Impact Statement only looked at DOD mercury not DOE or commercial mercury. The law prevents DOD from storing other's waste.
- *Participant from industry* – Has DOD ever considered building one 150,000 square foot warehouse? It's good public policy to store it all in one place.
- *Participant from DLA* – It was considered, but the idea was shelved after analyzing the environmental impacts associated with construction.
- *Participant from academia* – Has DOD considered storing commodity-grade mercury from other sources along with its stockpiles, particularly from the commercial sector? What kind of authorization would be needed to allow DLA to store other's mercury?
- *Participant from DLA* – The mercury storage facilities contain Defense National Stockpiles of mercury only. A statutory change would be needed to give DOD authorization to store other's mercury.
- *Participant from a non-governmental organization* – Has there been co-location of DOD and DOE stockpiles of mercury?
- *Participant from DLA* – Yes, at the Oak Ridge, Tennessee location.
- *Participant from academia* – What would it take to store additional mercury from DOE or a commercial facility at the Hawthorne site?
- *Participant from a non-governmental organization* – When the State of Maine asked DOD to take the waste from Holtrachem, DOD said it was prohibited to do so by law.
- *Participant from industry*: Long-term storage of privately-held mercury isn't a mission for DOD, but it is for the federal government as a whole.

Bill Fortune, Department of Energy

Mr. Bill Fortune presented information on the Department of Energy's National Nuclear Security Administration's mercury storage facility and operations at the Y-12 National Security Complex

US EPA ARCHIVE DOCUMENT

in Oak Ridge, Tennessee. Highlights of his presentation included an overview of the historical background of the mercury use and management at the Y-12 facility, the current inventory of mercury and facility characteristics, monitoring and inspection practices, and long-term storage issues.

During the presentation, panelists raised the following issues:

- *Participant from a non-governmental organization* – There was some uncertainty in the last year regarding DOE's current position regarding sales. How long has DOE committed to store mercury?
- *Participant from DOE* – DOE plans to continue to store its mercury stockpile and has estimated the cost for continued long-term storage out 40 years. As indicated in a December 2006 letter to Senator Obama, DOE has no current plans to sell any of this inventory.
- *Participant from a non-governmental organization* – Has there been any discussions with Homeland Security about what level of security is needed?
- *Participant from DOE* – Not that I am aware of.
- *Participant from a non-governmental organization* – Compare the mercury storage cost projections between DOD and DOE; why are the storage costs so much higher (3 to 4 times higher) for the DOE facility?
- *Participant from DOE* – I am not entirely sure, but suspect that some of the expenses such as re-roofing the storage building that were factored into the cost estimate contribute to this difference. I will look into the cost estimate further and follow up at the next panel meeting.
- *Participant from academia* – A cost breakdown of the DOE storage facility costs is needed that factors in the operating, capital, and the implicit insurance costs. Storage by a private party would involve costs such as insurance and the alternative use of the land.
- *Participant from a non-governmental organization* – In order for the panelists to make competent recommendations regarding sequestration of mercury, they will need more precise figures.
- *Participant from a non-governmental organization* raised the issue of the government-owned, contractor-operated (or GOCO) Hawthorne facility. Has the GOCO bought insurance?
- *Participant from DLA* – I need to check.
- *Participant from industry* – My insurance costs would not increase if I stored more mercury instead of retorting. I found the costs would not increase because the potential for mercury release is greater if he retorts. If there are export restrictions and no market, the picture changes.
- *Participant from academia* – What are the security costs associated with private storage areas?
- *Participant from a non-governmental organization* – It is not necessary to be terribly exact in estimating the costs of storage because the costs are so low
- *Participant from academia* – It is still important to have solid numbers to convince people that the costs are small.

PRESENTATION ON ALTERNATIVES TO STORAGE BY FEDERAL GOVERNMENT – BRAD BUSCHER, MERCURY WASTE SOLUTIONS

US EPA ARCHIVE DOCUMENT

Mr. Brad Buscher presented an alternative approach to government-owned long-term sequestration and storage of mercury. This approach is a public/private option modeled after the U.S. Enrichment Corporation, which was created to manage DOE's uranium enrichment operation. Mr. Buscher explained that the mercury could be removed from storage for certain approved uses. There would be a database for qualified uses.

- *Participant from a non-governmental organization* – What is the value- added in creating a monopoly on mercury supply instead of controlling the export?
- *Participant from industry* – The impetus for this approach is the need to keep track of where the mercury is going. There would be a clearinghouse entity where mercury is permanently stored and could be released for legitimate domestic use, or traded as part of a trade agreement with some other foreign partner. Artisanal mining would not be an approved use.
- *Participant from a non-governmental organization* – Would this alternative approach be a totally private entity or structured as a GOCO relationship?
- *Participant from industry* – It could be structured privately or as a GOCO relationship. The GOCO would probably be ideal.
- *Participant from a non-governmental organization* – Without some sort of trust fund, there is a potential for a private entity to mismanage the project and potentially create a bankruptcy resulting in the government being responsible for storing the mercury.
- *Participant from academia* – A private entity would benefit from continuing recycling of mercury that will be used for products but not sure how this entity could address the thousands of tons of mercury generated by the chlor-alkali industry.
- *Participant from academia* – This approach would need to focus on keeping costs down and knowing what incentives it would create in the marketplace.
- *Participant from academia* – If you have a single buyer and seller, one problem you create is that the broker will take the margin out so that the prices that the recyclers receive will be less than the prices that will be paid by the legitimate users. There's an inherent incentive for the brokers to take a cut, which could drive prices up for the legitimate users.
- *Participant from industry* – Better supply chain visibility is important. There may be legitimate uses for mercury, such as high efficiency lamps that help reduce energy consumption. Looking for as many options as possible makes sense.
- *Participant from industry* – Has any government entity (other than DOD and DOE) ever expressed interest in managing non-governmental stockpiles of mercury? Is EPA interested?
- *Participant from EPA* – No.
- *Participant from academia* – There is a clear need for secure management. DOD and DOE do not want the extra mercury from the private sector. Ultimately the expectation will be that the government or a pseudo-government entity will need to manage the mercury stockpiles. It might be something similar to what DLA and DOE are doing.

PANEL DISCUSSION ON MANAGEMENT OPTIONS FOR MERCURY

What is the impact of RCRA and other existing domestic statutes, and how do the RCRA regulations impact storage options in the United States?

US EPA ARCHIVE DOCUMENT

- *Participant from EPA* – At the time Bevill decisions were made there was not a lot of information to suggest that roasters, carbon kilns, retorts, and electrowinning processes had large- large volumes of constituents streams. If we get different information, a better approach than redoing the Bevill process may be to use 7003 (Imminent danger authority under RCRA) or CERCLA (the Superfund statute).
- *Participant from a non-governmental organization* – What is the current status of some of the more important processes that generate large byproduct amounts?
- *Participant from EPA* – If it is an air emission or waste stream off of an extraction or beneficiation of ore, then it is covered by the Bevill exemption. Waste captured in air pollution control equipment used on extraction or beneficiation processes is Bevill-exempt.
- *Participant from academia* – The Bevill exemption should not apply to this particular kind of waste. The more important questions are what was meant by Bevill and should the other sources of material that are all high toxicity, low volume wastes be included in the Bevill exemption.
- *Participant from EPA* – The Toxics Release Inventory is a data source that reports multimedia information for mining, and includes air, water, and land data.
- *Participant from academia* – Although it is true that the TRI reports emissions data, it does not include measurements for commodity-grade mercury. The commodity-grade mercury reported in Nevada and Alaska is good data. He also suggested reviewing Mr. Lawrence's estimate of 100 tons per year and how this number will slide down over the next few years if there is a ban.
- *Participant from industry* – The 100 ton demand in the U.S. does not include the chlor-alkali plants. Demand has fallen due to closure of large thermostat manufacturing, but another large drop is not expected.
- *Participant from a non-governmental organization* – Switches and measuring devices comprise most of the 100 tons. There will be a big decline because of State bans on switches and relays in States with large populations. Batteries will be phased out by 2011. Estimates a decline in mercury use to about 30 to 50 tons.
- *Participant from industry* – The chlor-alkali industry use from 1990–1995 was about 320 tons of mercury. Over the past 10 years this use was reduced to 160 tons, and the current use is about 10 tons per year, which excludes surplus from closed facilities.
- *Participant from academia* – In terms of the issue of government-contracting entity to sequester mercury over time, it's pretty clear that no one in DOD or DOE is going to be putting mercury on the market in 40 years. If that was a private enterprise we may take up half of that. It's an important distinction. It is relevant for this panel in terms of what we do with commodity-grade mercury at the point of impact of price and the byproduct to the miners to the degree that they operate on the margin and make this technically feasible in the way that mercury is being released. The high price of mercury will give them more incentive to recover byproducts and lower prices will give them less incentive. Not aware if that is an operational margin but the panel should consider that.
- *Participant from academia* – If there is an export ban and the market goes away, there's not an incentive and it would almost be illegal for the mining industry to do anything other than dumping it into a storage facility. If they make it into a commodity, it can't be sold because there will be no market. There has to be some sort of process that allows mercury to be moved off the mine sites (like in Nevada) that is legal and safe.

US EPA ARCHIVE DOCUMENT

- *Participant from industry* – There needs to be policy and technological solutions in place for the mining industry to manage mercury so we can continue our operations. An export ban would create a surplus where mercury that is recovered would be seen as a waste rather than a commodity. This would trigger certain legal requirements that could significantly raise costs to operate our core business, which would be difficult for us. Also, once the export ban is in place, there would be a need to identify what the preferred sources of the mercury would be because we have agreed that there are legitimate uses for mercury (even if they're on the decline). The question is whose mercury becomes that source.
- *Participant from industry* – If the export ban is passed, under subtitle C requirements, how would anyone get a RCRA permit? Not sure how anyone could develop an acceptable closure program when the mercury would need to be stored at the facility forever.
- *Participant from EPA* – This would be something new. The facilities would be designed to never close. Alternatively, they could "clean close" by transferring the mercury to another facility.
- *Participant from a non-governmental organization* – Given that this conversation has been occurring, has there been discussion with DOE or DOD regarding the disposition of mercury that is currently being stored?
- *Participant from DLA* – We consulted with the Market Impact Committee to obtain a reasonable quantity of mercury to analyze for potential environmental impacts related to sales. We did not get their advice and use it to make our decision to store for 40 years.
- *Participant from a state organization* – We could modify RCRA so we don't have to use RCRA Subtitle C authority. Subtitle C doesn't fit long-term storage.
- *Participant from a non-governmental organization* – We have some basic questions to answer. Is RCRA the appropriate authority with which to permit this kind of facility? This material doesn't take up a lot of space. A limited number of facilities could store this mercury. Not a lot of places are needed. Hawthorne or something like it makes sense to pursue. About 200 tons a year would be added. However, that doesn't mean that it's the government's mercury. It could be put there, but doesn't have to be owned by the government. So, what is our expectation of where it is going physically? What arrangements need to be made? Does it make sense to have more than 1 or 2 of these around the United States?

Besides storage by the Federal government, what other options, or combinations of options, are possible for each source? Consider short and long-term arrangements.

- *Participant from academia* – There aren't a whole lot of options. It doesn't look like there are that many other options besides the U.S. government. We are going to end up with a facility that involves the government.
- *Participant from industry* – We can list private companies but we have to remember that this is a permanent facility. Companies are not permanent. U.S. Government is permanent. A private company may mismanage it, and the U.S. Government will ultimately pay for it.

US EPA ARCHIVE DOCUMENT

- *Participant from academia* – What other legitimate markets can be explored internationally? Is there a reason to look internationally as far as other consumptive uses?
- *Participant from a non-governmental organization* – The world will do fine without our (U.S.) 200 tons per year. It's not a significant impact. The Chinese have their own unique situations that they will manage. An alternative needs to be found and/or relied on for the various mercury uses in China.
- *Participant from industry* – The world market purchases approximately 2,000 tons per year. Approximately 1,000 tons is produced by virgin mercury mining, which loses approximately 10% to the environment by that activity. Therefore, 100 tons is going into the atmosphere. Until we reach a state where there is no longer virgin mercury mining, we should continue sales to prevent the emission of that 100 tons per year. If we remove our 200 tons of mercury, the world price of mercury will go up, which will give incentive to primary mercury mining. Every pound of secondary mercury we export replaces one pound of virgin mercury. If the price is too high, people may restart artisanal mercury mining.
- *Participant from a state organization* – The mercury options, whether private or government run, are the same. The infrastructure will cause the cost to vary. If it's an option other than a government run option, who pays, particularly if it's a privately run option? How does the money flow from the recycled mercury that goes into the stockpile? How does the money flow in anything other than a government-supported option?
- *Participant from a non-governmental organization* – If the U.S. Government is to be a leader it needs to lead by example in a global effort to remove as much mercury as possible.
- *Participant from a non-governmental organization* – Those who want to see this in a short-term way as a substitute for primary mining are missing the fact that if the price goes up, the demand won't be static. Half of mercury used in artisanal mining is for whole ore amalgamation and UNIDO is promoting an alternative. There's no technical barrier here because there are non-mercury alternatives available. We're advocating an export ban to reduce global demand. That will happen when mercury is harder to get.
- *Participant from academia* – We need some firm numbers on a user fee. For example, how many collected bulbs per use per year would go into a long-term storage?
- *Participant from industry* – 800 million bulbs.
- *Participant from academia* – There are two separate activities: sequestration and the export ban. We don't need to mix and match these. Sequestration pulls mercury out of the environment permanently. An export ban has other consequences that will depress the price of mercury on the market. The direct purchase and sequestration does not have the same issues as an export ban. It's a problem for recyclers because it's less expensive to throw a fluorescent lamp in a dumpster than to recycle it.
- *Facilitator* – Do we want to consider treatment as an option for the long-term?
- *Participant from academia* – No.
- *Participant from industry* – We need to consider treatment.
- *Participant from industry* – We should not suggest that EPA or the government spend the money for treatment research, but if a private entity chooses to do this then that's fine.

US EPA ARCHIVE DOCUMENT

- *Participant from a non-governmental organization* – My recommendation is that the government should base policy recommendations on ore reductions and consider storing the mercury waste not just for 40 years but perhaps for a much longer time.
- *Participant from industry* – Stabilization is an option that should be kept on the table. The government should not have to take this on; however, they should be open to considering new technologies that can be demonstrated as protective of the environment.
- *Participant from academia* – Need to look at other legitimate international markets.

What issues arise with regard to cost, liability, security, legal issues, etc. for options other than storage?

To begin this discussion, Ms. Canavan noted that three options – limited export to legitimate markets, allow exports to offset primary mining, and the export ban – all have to do with an international focus. It was decided to address these three options at the Denver and September meetings.

For the day's discussion, participants considered the pros and cons of domestic storage options, which include private storage, public storage, the U.S. Enrichment Corp model/Mercury Corp, and treatment technology.

Private Storage – (Private options)

- *Participant from a non-governmental organization* – No short-term taxpayer costs.
- *Participant from a non-governmental organization* – There isn't an obvious private entity that would be interested in doing this, at least currently. Is insurance available to a purely private entity? Anyone doing this would need to be insured.
- *Participant from DLA* – Senator Bennett in Utah introduced legislation in an appropriations bill making it illegal to store mercury in a facility that was not owned by the US Government.
- *Participant from industry* – His insurance for storage may not be a problem. It is easier to store mercury than it is to retort it. The potential for release for storage is much less. His capacity would be about 2,000 – 4,000 tons. Biggest drawback is a lack of guidance in the regulations, particularly as it relates to a closure plan. Would need more guidance on what the regulations are and what must be done to meet them. He has the option of land disposing in Canada.
- *Participant from a non-governmental organization* – Security is a downside because of the additional costs incurred. How that might be required and to what level, based on Homeland Security issues and solvency.
- *Participant from industry* – Insurance would need to cover the issue of closure. Basic liability insurance depends on how much and how long you're storing. Terrorism coverage and precious metals coverage are also other insurance issues.
- *Participant from academia* – Perhaps there should be a two-tiered system. Private recyclers would be able to handle mercury in the short-term by accepting, recycling, and managing it and then at some point when there is a surplus, this surplus would be transferred to a public entity for long-term storage.

US EPA ARCHIVE DOCUMENT

- *Member of the public* – One possible variation could be that the government own the land where the operation is but a private entity would be responsible for the operation. In other words, a GOCO option.
- *Participant from industry* – The key negative for private storage is that companies would manage their own storage facilities, which can lead to a whole host of problems. This makes it not a viable option. I'd rather manage it myself instead of relying on another private entity to manage it, which leads to multiple storage sites.
- *Participant from academia* – It could be handled if there was a 100-ton limit. Private entities who have in excess of 100 tons would have to dispose with the Federal storage, but if they only have 4 or 5 tons, it could be sent to a private storage facility.
- *Participant from a state organization* – Would a private entity want to take on the corrective action liability and financial assurance requirements of a RCRA permit?
- *Participant from industry* – More interested in short-term storage option rather than long-term, with the ultimate solution being stabilizing and land disposal. I will get stuck with mercury as demand falls because I won't be able to sell it. I will have to say:; if you want me to handle your mercury, you need to pay met to store it.
- *Participant from a state organization* – Most States would have a problem with the regulatory costs for the State, such as setting up regulatory programs. State-level concerns need to be factored in.
- *Participant from a non-governmental organization* – The costs would be built into what you pay to store the mercury. A recycler would charge customers an amount to cover future closure costs. Bethlehem would carry a closure bond. When Bethlehem closes, it pays the GoCo at the permanent storage facility to take it.
- *Participant from academia* – It would be a large bond.
- *Participant from industry* – I would like to have an out if the facility has to close.
- *Participant from EPA* – There are two ways to close a facility: clean close it or close it as a landfill. EPA's closure plan requirements would require enough financial assurance for EPA to come in and correct the deficiencies that exist at the facility and then find another entity to take ownership. You need financial assurance, need to get it right.
- *Participant from academia* – A private company can go belly up and then the government will have the responsibility of managing a facility anyway.
- *Participant from EPA* – The point of RCRA is to create the financial assurance to cover the possibility of the Federal government being forced to take over operations.
- *Participant from industry* – The financial assurance would have to be forever because an entity would have to manage a mercury storage facility forever. If it costs over $1 million a year to operate this type of facility, it would require a bond at 25 times the annual cost.
- *Participant from academia* – If you set up a permanent storage facility there are operating costs to run the facility but there is no revenue stream. The only viable entity to pay for this is the Federal government.
- *Participant from a state organization* – If recyclers no longer want to participate in the supply chain because the cost outweighs the benefit, States will have enforcement issues to address.

US EPA ARCHIVE DOCUMENT

- *Participant from a non-governmental organization* – Do we want more than one private facility in the U.S.? I would like to see a private sector component but need to figure out the financial aspects.
- *Participant from EPA* – The technology to maintain this type of facility is not difficult. The financial assurance would be enough to repackage everything in the facility, and replace everything at the facility from the air monitoring measures to security.
- *Participant from a non-governmental organization* – What is the closure scenario if a State decides that they don't want the facility in their State anymore? This is possible politically.
- *Participant from EPA* – It likely would be viewed as an above-ground landfill.
- *Participant from industry* – This is probably the most likely scenario.

Public Storage – (including Hybrid – U.S. Enrichment Corp Model/Mercury Corp)

- *Participant from industry* – If the government is a partner, a lot of the insurance factors go away. Security is also a positive.
- *Participant from a non-governmental organization* – When I look at this model, the government (i.e., the public) takes on all the costs and assumes the liability.
- *Participant from academia* – This should be separate from the export ban (the ban includes international). At what point does mercury become a liability? If we decide to charge people for taking on the mercury, now the incentive goes up the supply chain. Taxpayers should buy the mercury and store it. The export ban would do the same thing for the international market. Holding on to mercury is a bad thing but it may be better to do as a society.
- *Participant from academia* – There's going to be opposition to paying. The economic arguments are sound but there are political realities, and there are going to be a lot of regulatory issues that will affect them.
- *Participant from academia* – If the recycler has to pay to dispose of the mercury, there will be a negative impact on the price of mercury.
- *Participant from a state organization* – The dollar amount is not a factor. There will be some cost imposed.
- *Participant from industry* – From a mining stand point, the issue is what the embedded costs of final storage are. If it costs more to send it to another company, then we'd consider doing it ourselves. We don't want a proliferation of storage areas around the country that have potential long-term liabilities associated with maintaining those facilities. There are economies of scale here, such as security, monitoring, etc. Incentives for the mining industry are driven by the regulatory structure. Concerns are with the international implications because we have better control over managing the mercury process between foreign countries and the U.S.

Treatment Technology

- *Participant from industry* – I'm not aware of any that are proven. The long-term implications of storage can be difficult in terms of who holds the liability, how do you fund it in perpetuity, etc. If a viable technology can be developed, it makes sense to keep open an option that can permanently keep mercury in a stable form. This is long-term.
- *Participant from industry* – We're working on a technology because of the threat of an export ban that will result in the long-term storage of mercury. There's sufficient

US EPA ARCHIVE DOCUMENT

evidence that we can develop technology that can keep leachability low enough to satisfy most of EPA's tests. With above-ground storage, there is a NIMBY factor. My customers would rather landfill because the mercury is neutralized for 50 years.

- *Participant from industry* – We shouldn't exclude it for possibility in the future.

PUBLIC COMMENT

There were no public comments.

ADJOURN

At the conclusion of the meeting, Ms. Cleland-Hamnett thanked participants for their contributions.

US EPA ARCHIVE DOCUMENT