State of Oregon
Department of Environmental Quality Memorandum

Date: May 26, 2010

To: Environmental Quality Commission

From: Dick Pedersen, Director

Subject: Agenda item C, Action item: Petition for reconsideration: Best available technology determination for treatment of spent activated carbon at the Umatilla Chemical Agent Disposal Facility
June 16-17, 2010, EQC meeting

Purpose of item

This item will ask the commission to take action regarding a petition for reconsideration of the commission's Feb. 19, 2010, best available technology determination for treatment of spent activated carbon at the Umatilla Chemical Agent Disposal Facility.

DEQ recommendation and EQC motion

The Department of Environmental Quality requests that the Environmental Quality Commission deny, or take no action on, the petition for reconsideration of the best available technology determination for treatment of spent activated carbon at the Umatilla Chemical Agent Disposal Facility, as issued by the commission on February 19, 2010.

Background

Oregon state law requires the Umatilla Chemical Agent Disposal Facility to use disposal methods that are the best available technology. To do so, EQC must determine that any proposed method is the best available technology to meet all regulatory criteria and is protective of public health and the environment. In 1997, DEQ determined that the best available technology for disposal of chemical agent and munitions at the Umatilla Chemical Agent Disposal Facility was the Army's baseline incineration system, which met all applicable regulatory criteria; this DEQ determination was followed by an EQC finding that incineration was the best available technology.

In the final judgment in GASP, *et al*, v. EQC, *et al*, Case No. 9708-06159, known as GASP IV, the judge remanded to EQC three findings on the best available technology for the Umatilla facility. One of the remanded determinations is "the destruction of hazardous waste originally intended for the dunnage incinerator."

In evaluating the determination for the destruction of hazardous waste originally intended for the dunnage incinerator, EQC determined, in September 2007, that the best available technology for treatment of secondary wastes was incineration in the metal parts furnace and deactivation furnace system with micronization for treatment of spent carbon.

In February 2010, after reconsidering the best available technology for treatment of spent activated carbon, EQC issued a final order. In this order, the commission made a number of findings, including:

- The metal parts furnace is the best available technology for treatment of agent-contaminated spent carbon at the Umatilla Chemical Agent Disposal Facility.
- Sulfur-impregnated spent carbon is expected to be agent-free, and after confirmation of its agent-free status, the best available technology for treatment of agent-free sulfur-impregnated carbon is to manage it as routine hazardous waste, shipping it offsite for treatment as needed and then disposal.
- New information shows that treatment of agent-contaminated spent carbon in the deactivation furnace system with carbon micronization presents the potential for operational difficulty and safety risk, and is, therefore, not the best available technology for treatment of agent-contaminated spent carbon.
- Because the volume of agent-contaminated spent carbon is significantly smaller than originally anticipated, the metal parts furnace is a viable alternative to the deactivation furnace system with carbon micronization for treatment of agent-contaminated spent carbon.

On April 16, 2010, a petitioner filed a petition for reconsideration of the spent carbon best available technology determination. Under OAR 137-003-0675, a party may file a petition for reconsideration or rehearing of a final order in a contested case with the agency within 60 calendar days after the order is served. The petition for reconsideration was filed in a timely manner, and requests that, for treatment of carbon, "…a MPF [metal parts furnace] not be classified as BAT [best available technology] due to its indicated technical, institutional and environmental shortcomings and risks; but rather continue to consider Carbon Micronization as BAT, since it is the only technology with a proven and successful record of operation."

Under OAR 137-003-0675, the commission may consider a petition for reconsideration or rehearing as a request for either or both. The commission may grant or deny the petition by summary order and, if no action is taken, shall be deemed denied as provided in Oregon Revised Statutes 183.48

Key issues

The petitioner raised a number of issues, as seen in attachment A, related to DEQ's recommendation for, and the commission's consideration of, the deactivation furnace system and carbon micronization system. DEQ reviewed these issues and provided responses to each issue in attachment B. The petitioner did not provide any new information in his request.

Attachments

A. Letter from Richard T. Sheahan, MicroEnergy Systems, Inc. to Oregon Environmental Quality Commission, Petition for Reconsideration of the Final Order Determining BAT for Treatment of Spent Activated Carbon, April 16, 2010. (DEQ Item No. 10-0469)
B. Memorandum, Petition for Reconsideration: Best Available Technology Determination for Treatment of Spent Activated Carbon at the Umatilla Chemical Agent Disposal Facility (DEQ Item 10-0605)

Approved:

Section: _____
Steven R. Potts

Division: _____
Linda Hayes-Gorman

Report prepared by: M.J. Davis,
Senior compliance inspector
Phone: 541-567-8297, ext. 229

MicroEnergy Systems, Inc.
83 Shipwright Street
Annapolis, Maryland 21401
Ph. 410-280-6055

10-0469

Mr. Rich Duval
Oregon Department of Environmental Quality
256 East Hurlburt
Suite 105
Hermiston, Oregon 97838

April 16, 2010

REF: "Final Order Determining BAT for Treatment of Spent Activated Carbon" (DEQ 10-0223)

Dear Mr. Duval:

Enclosed is a copy of our Petition for Reconsideration of the referenced Order issue on February 19, 2010 for your review and consideration.

If you have any questions, or desire further information, please contact us.

Sincerely,

Rich Sheahan

Richard T. Sheahan

VIA FedEx - Airbill 8723 7695 5222

COPY

MicroEnergy Systems, Inc.

83 Shipwright Street
Annapolis, Maryland 21401
Ph. 410-280-6055

Mr. Bill Blosser
Chairman – Oregon Environmental Quality Commission
811 SW 6-th Avenue
Portland, Oregon 97204

April 16, 2010

REF: "Final Order Determining BAT for Treatment of Spent Activated Carbon" (DEQ 10-0223)

Dear Chairman Blosser:

In accordance with OAR 137-003-0675, we hereby Petition for Reconsideration of the referenced Order issued on February 19, 2010 by your Commission. Our filing is within the 60 calendar day OAR statute.

This request is being submitted because review of the DEQ Response to Comments [DEQ Item No.10-0237 (11)] revealed that numerous and important facts provided during the public comment period were omitted and not presented to your Commission.

Without these facts and information for your consideration, we believe your Commission could not have made an informed decision to characterize the Metal Parts Furnace (MPF) at the Umatilla ChemDemil Facility (UMCDF) as its Best Available Technology (BAT) for disposal of spent activated carbon.

Attached is a side-by-side summary of: (a). Key DEQ Responses to Public Comments, vs. (b). Issues that your Commission should reconsider – highlights of which include:

- **UNPROVEN TECHNOLOGY**: Generally, to be designated BAT, a technology should be proven. However, future trial burns are being planned to demonstrate the effectiveness and efficiency of a MPF – thus, it is not yet proven technology.

- **RISKY SAMPLING:** DEQ is proposing a random statistical-probability sampling procedure to characterize carbon as "agent-free", which has significant risks to the environment, and is comparable to "rolling dice".

- **EXPERT CONFIRMS:** Dr. David Mazyck, an internationally acclaimed expert in the field of research, testing, and development of activated carbons reviewed DEQ's sampling procedure and confirmed its risks. DEQ failed to mention his name or comments in their Response to EQC.

- **FACTS WERE OMITTED:** DEQ gives "substantial consideration" to National Research Council (NRC) "concerns" about using Carbon Micronization (CMS), even though CMS successfully destroyed all carbon at the Johnson Island ChemDemil Facility (JACADS) –and- even though NRC omitted important facts and information.

- **UNDEFINED COSTS:** If installed, CMS equipment would cost a fraction of DEQ's asserted total of $18.2 million; yet no detail was provided that quantifies or justifies why it would require double-digit millions of dollars for its installation –or- many times the CMS equipment costs.

- **PRESUPPOSED CONCLUSION:** It seems DEQ has already presupposed: (a). Quantities of carbon to be destroyed, which are yet to be confirmed, (b). Agent sampling procedures, which are yet to be demonstrated, and (c). Use of a MPF, which is a yet to be proven technology for efficient carbon destruction.

Therefore; DEQ's presupposed and unproven conclusions could potentially put Oregon's environment, public health, and possibilities for highway spillage at risk.

The attached side-by-side comparison provides further explanation of the above highlights.

More details were submitted during the public comment period, and more are available if you and your Commission members would so desire and request.

In summary we believe your Commission did not have sufficient facts and information to correctly classify a Metal Parts Furnace (MPF) as Best Available Technology (BAT).

We respectfully request that a MPF not be classified as BAT due to its indicated technical, institutional and environmental shortcomings and risks; but rather continue to consider Carbon Micronization as BAT, since it is the only technology with a proven and successful record of operation.

If you have any questions, or desire further information, please contact us.

Sincerely,

R. Sheah

Richard T. Sheahan

Attachment: Eight (8) page - Side-by-side comparison - described above.

COPIES SENT TO:

- EQC: Ken Williamson, Commission Vice Chairman
- EQC: Donalda Dodson, Commissioner
- EQC: Jane O'Keefee, Commissioner
- EQC: Judy Uherbelau, Commissioner
- EQC: Stephanie Clark, Administrator

- DEQ: Richard Duval, Administrator
- Oregon Governors Office, Michael Carrier, Natural Resources Policy Director

- Morrow County (OR): Judge Terry Tallman, Commission Chairman
- Morrow County (OR): Ken Grieb, Commissioner
- Morrow County (OR): Leann Rea, Commissioner
- Morrow County (OR): Casey Beard, Emergency Management Director
- Morrow County (OR): Carla McLane, Planning Director

- G.A.S.P., Karyn Jones, President
- G.A.S.P., J.R. Wilkinson, Technical Expert/Researcher
- Oregon Sierra Club, Dr. Bob Palzer
- Oregon Wildlife Federation, Paul Loney
- Government Accountability Project, Richard Condit, Lead Attorney in D.C
- Co-counsel, Mick Harrison
- Chemical Weapons Working Group, Craig Williams, Executive Director

EQC Petition for Reconsideration - by MicroEnergy Systems, Inc. April 16, 2010

REF: "Final Order Determining BAT for Treatment of Spent Activated Carbon" (DEQ No. 10-0223)

	DEQ RESPONSES TO PUBLIC COMMENTS	ISSUES THAT EQC SHOULD RECONSIDER
1	DEQ states that Metal Parts Furnace (MPF) has been used successfully to treat other classes of secondary wastes.	MPF may have been used to treat other classes of secondary wastes – but that does not mean it can effectively and efficiently destroy agent-laden activated carbon. Spent activated carbon is a very difficult material to burn based on: (a). Numerous facts related to fundamental principals of combustion, and (b). Proven development of the Carbon Micronization System (CMS) that effectively disposed all of the spent-carbon at the Johnson Island ChemDemil Facility (JACADS). To effectively burn carbon at JACADS, the CMS system: • Required an average carbon particle size of approximately seven (7) microns. About six of those particles placed side-by-side would equal the width of a human hair. • Co-mixed propane and carbon together within the burner on a 50 -50 basis to achieve acceptable combustion efficiency. This was necessary because of the negligible volatile content inherent in all activated carbons. The relatively large carbon particles (i.e., compared to micron-sized) that would exist in a MPF would require significantly longer time periods to complete combustion; thus, diminishing its effectiveness and efficiency (see more in next section). During development of the CMS for JACADS, it was determined that unless natural gas or propane was co-mixed with micron-sized carbon particles, it would **NOT** efficiently burn. It is **NOT** possible to add natural gas or propane to co-mix with activated carbon within a MPF; therefore, a significant lack of volatile content becomes a limiting factor in ensuring complete and efficient combustion. **These facts and principals should have been, but were NOT, mentioned by DEQ in its response comments to EQC – thus – questioning how Best Available Technology (BAT) determination could be made with insufficient and missing important information.**

	DEQ RESPONSES TO PUBLIC COMMENTS	ISSUES THAT EQC SHOULD RECONSIDER
2	DEQ states that upon vaporization of the agent, *[in carbon]* destruction would occur within a fraction of a second. The length of the volatilization process will be determined through requirements of a future permit modification process and trial burn.	Carbon particles must be completely burned-out to have assurance that all agent is destroyed. If you throw a phone book into a fireplace – it will take hours to burn-out. If that phone book is pulverized into micron-sized particles – it will burn instantaneously. There is a fundamental combustion principal: The smaller a fuel particle size is, the faster and more efficiently it burns. The principal states: The time it takes for a solid particle to completely burn-out relates to its diameter raised to the second power. Known as the "**D^2 Law** – it is expressed generally as: **$T \approx D^2$** • Where: T = time -and- D = carbon particle diameter size. • Average micronized carbon particle in a CMS is seven (7) microns. • Average carbon particle size in a MPF would be about 1,500 microns (i.e., about 1/16 inch) Based on the **D^2 Law** – it would be impossible for an average sized carbon particle in a Metal Parts Furnace (MPF) to burn-out in a fraction of a second as claimed by DEQ - especially in the absence of sufficient volatile content –and- minimum air turbulence (see more in next section). Comparison of complete carbon burn-out times based on **D^2 Law:** • Micron sized particle at JACADS (7 microns) — Determined to be approx 60 milliseconds. • Average sized particle in a MPF (1,500 microns): — Larger particle sizes, with no co-mixing of natural gas, with minimum air turbulence – complete carbon burn-out times in a MPF will probably be measured in hours, not minutes or seconds. **These facts and principals should have been, but were NOT, mentioned by DEQ in its response comments to EQC – and should be considered by EQC in any Best Available Technology (BAT) assessment.**

	DEQ RESPONSES TO PUBLIC COMMENTS	ISSUES THAT EQC SHOULD RECONSIDER
3	DEQ indicates that a trial burn will be planned and conducted to demonstrate the effectiveness of the MPF.	As mentioned in the above section - **Turbulence** - is also a fundamental combustion principal necessary for air and carbon to mix together, so that all fuel particles are equally exposed to sufficient air to complete combustion. • Turbulence is limited in a MPF because carbon particles would be stacked one upon each other while lying flat within trays. • Carbon particles on the bottom of the stack could be "starved" for air – thus – potentially yielding incomplete combustion. • These shortcomings are reasons why a MPF takes much longer to burn materials, and why it can yield incomplete combustion. During the exhaustive testing and independent laboratory analyses conducted during development of the Carbon Micronization System (CMS) for JACADS – as witnessed by ChemDemil personnel - it was proven that absolute requirements to achieve complete carbon burnout included: (a). Micron-sized carbon particles, (b). Vigorous air turbulence, and (c). Co-mixing of propane or natural gas. These features are not available in a MPF; thus, restricting its combustion efficiency for activated carbon. **It's difficult to understand how MPF can be designated Best Available Technology (BAT), if such basic misunderstandings of combustion facts and principals are omitted by DEQ.**
4	DEQ indicates that any option selected for treatment of agent-contaminated carbon must undergo a trial burn to demonstrate treatment standards.	Generally, a technology requires proven capabilities to be designated Best Available Technology (BAT) DEQ did not mention fundamental facts and principals of combustion that inherently limit the capabilities and efficiency of a Metal Parts Furnace. AND DEQ did indicate that future trial burns are planned to demonstrate MPF capabilities, in order to ostensibly prove its efficiency to destroy carbon. Thus, it is yet to be proven technology. **It is further difficult to understand how MPF can be designated BAT: (a). since its limited capabilities were not mentioned by DEQ, and (b). since a trial-burn is still required to demonstrate and prove its treatment standards.**

	DEQ RESPONSES TO PUBLIC COMMENTS	ISSUES THAT EQC SHOULD RECONSIDER
5	DEQ states that it gives "substantial consideration" to the National Research Council (NRC) "concerns" and "problems" regarding the use of Carbon Micronization System (CMS).	NRC concerns and problems" with Carbon Micronization System (CMS) include: • ***"Has been shown to be a highly problematic process option"*** • ***"Difficulties were experienced with the CMS at JACADS"*** • ***"The micronization process proved difficult to operate."*** • ***"Resulting powder could under some circumstances become an explosive mixture."*** • ***"No explosive event happened at JACADS, but the possibility is real and must be considered."*** These are incredibly subjective – vague - disingenuous and misleading statements. NRC failed to provide any details about **well documented** facts that initially the JACADS operator: (a). installed the CMS using inferior refractory material, which was specified by the operator that caused excessive slagging, and (b).failed to operate the CMS with sufficient combustion air. In time, these problems were corrected. NRC failed to mention why CMS was implemented in the first place - because the Army – in the mid-1990's - conducted at least two carbon destruction tests in different ChemDemil Metal Products Furnaces (MPF), yielding **unacceptable** combustion efficiency results. NRC failed to mention shortcomings and inefficiencies inherent in a MPF system. NRC failed to mention the CMS was designed to exceed National Fire Protection Association (NFPA) standards applicable to every utility and industrial combustion power plant – nationwide. NRC failed to mention that the CMS was the "first-of-a-kind", never before completed, technology that did have some technical start-up "bugs", all of which had technical solutions derived from "lessons-learned". NRC diminished the irrefutable fact that **CMS successfully destroyed all contaminated carbon at JACADS**, and is the only proven technology in existence that can make that claim. **These issues leave questionable doubts as to how DEQ could classify a MPF as Best Available Technology, when it gives "substantial consideration" to a lack of facts presented by NRC.**

	DEQ RESPONSES TO PUBLIC COMMENTS	ISSUES THAT EQC SHOULD RECONSIDER
6	DEQ notes that determination of agent-free status for the Pollution Abatement System (PAS) filters must be confirmed by specific analytical data, the requirements of which will be established through a permit modification process. DEQ indicates any technology selected for BAT must achieve acceptable destruction removal efficiencies (DRE) of 99.99% for treatment of agent in the Metal Parts Furnace (MPF). A MPF demonstration will ensure that complete combustion is achieved.	PAS filters were originally deemed necessary to meet various air emission standards. The Army has requested a permit modification to utilize a random - statistical - probabilistic - sampling procedure to classify approximately 672,000 pounds, or about 93 percent of the total Umatilla ChemDemil (UMCDF) quantity of spent carbon as "agent free". It seems DEQ has already presupposed that the remaining 48,000 pounds, or about seven (7) percent of the total quantity of spent carbon will require on-site disposal. Since seven (7%) percent is perceived as a "small" quantity, it appears that DEQ justifies using a Metal Parts Furnace (MPF). It seems DEQ has already presupposed that MPF will achieve acceptable removal efficiencies to accommodate the smaller quantity of carbon, even though: • Future demonstration tests are necessary to prove its efficiency AND • Failed results from at least two MPF tests conducted by the Army in the 1990's are disregarded. **These issues leave questionable doubts as to how a MPF could be considered Best Available Technology, given the apparent presupposed facts and assumptions by DEQ that are currently unproven.**

	DEQ RESPONSES TO PUBLIC COMMENTS	ISSUES THAT EQC SHOULD RECONSIDER
		Activated carbon derived from coconut shells (i.e., type used at UMCDF and JACADS) has unique features and characteristics that are different and superior to other activated carbons derived from materials such as coal and wood.
7	**PMR 09-012** (DEQ No. 09-1094) outlines a statistical probabilistic procedure that entails: (a). taking 22 unbiased, random grab samples from carbon storage drums, (b). each sample weighing about one gram, and (c). each sample analyzed using laboratory techniques to determine if the carbon samples are either "agent-free", or contaminated. It will be assumed that a series or grouping of carbon storage drums will all have at least a 90 percent confidence factor that 90 percent will be "agent- free"; thus, leading to a potential conclusion that all 670,000 pounds are agent-free. DEQ indicates that specific sampling requirements for determining status of carbon's agent-free status will be established through a future permit modification process, including a public comment period.	One such feature includes superior internal adsorption forces that "tightly" holds and retains its adsorbate (e.g., agent). In any drum containing carbon, it is possible that contaminated particles **"A"** could be located immediately adjacent to non-contaminated particles **"B".** Because of the carbon's inherent strong adsorption forces, it is possible that no contamination would transfer from particles **"A"** to particles **"B".** As such, **09-012-PMR** could result in a procedure that could randomly "grab" a sample of non-contaminated **"B"** type particles, and mistakenly characterize the entire drum as agent free. Whereas, if the sampling probe had been an inch to either side, it could have randomly "grabbed"an adjacent contaminated particle **"A"** - potentially yielding total different lab results. **Dr. David Mazyck**, who is an internationally acclaimed expert in the field of research, testing, and development of specialty and unique activated carbon materials and applications, reviewed and agreed with the above logic. Thus, **09-102-PMR's** random statistical-probabilistic sampling procedure with a 90% confidence factor that 90% of carbon will be agent-free, yields 81%. This results in a 19% chance that some drums might contain agent. One has to wonder how the probability risks of a 19% chance of agent being discharged into the environment could be acceptable. This would be comparable to "rolling dice" with double-down gamble risks to Oregon's environment, public health, and potentials for spillage on highways. **These facts and principals – mention of Dr. Mazyck's opinion - should have been, but were NOT, mentioned by DEQ in its response comments to EQC – and should be considered by EQC in any Best Available Technology (BAT) determination.**

	DEQ RESPONSES TO PUBLIC COMMENTS	ISSUES THAT EQC SHOULD RECONSIDER
8	The $18.2 million cost of a Carbon Micronization System (CMS) include contracts, footprint and design, engineering evaluation of hazards, siting, closing impacts, permitting, construction, procedure and training development, and readiness review.	DEQ is partially justifying Best Available Technology for a Metal Parts Furnace based on its suggested lower cost, as compared to CMS. Equipment for a CMS system would cost only a small fraction of the $18.2 million indicated by DEQ. Implementation tasks indicated by DEQ are real and necessary; however, it is difficult to understand how those costs would exceed double-digit millions of dollars –or- many times the cost of the CMS equipment. It would be reasonable for EQC to request a breakdown budget list to quantify and justify these costs - rather than a vague total that cannot be compared to any meaningful criteria. Especially, since many of these costs were quantified at JACADS. **These implementation costs should have been, but were NOT, quantified by DEQ in its response comments to EQC – and should be considered by EQC in any Best Available Technology (BAT) determination.** **We are all tax payers, and we all should be concerned.**

9	For reference orientation - attached Figure 1 indicates photo images of the Carbon Micronization System (CMS) that successfully destroyed all the spent activated carbon at JACADS – developed by MicroEnergy Systems, Inc.

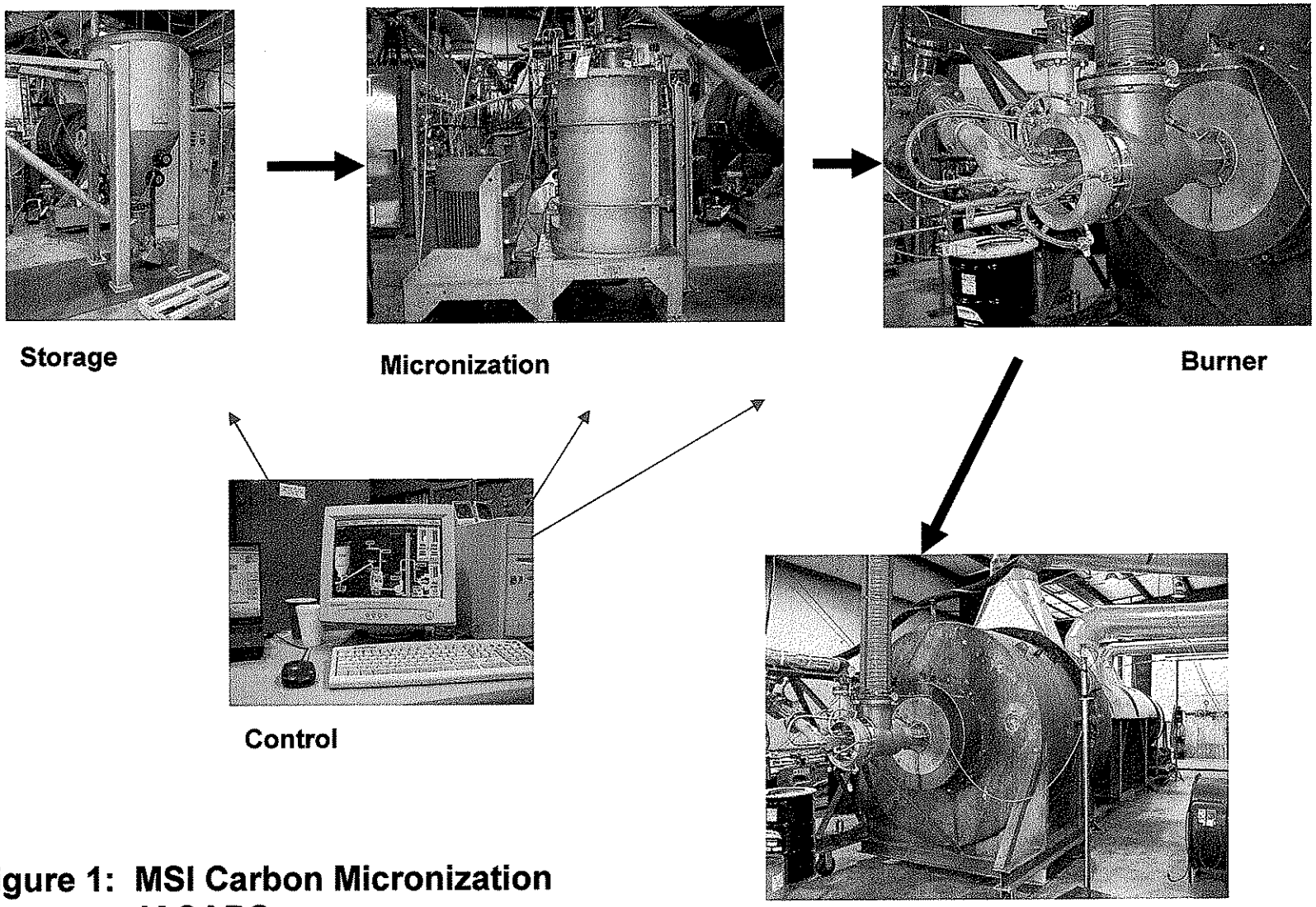

Figure 1: MSI Carbon Micronization System – JACADS

Test Kiln at MSI Combustion Test Facility – Oakland, MD. Dimensions are the same as the JACADS DFS Kiln

State of Oregon
Department of Environmental Quality Memorandum

DEQ Item No. 10-0605 (11)

To: Steven Potts, Acting Administrator
Chemical Demilitarization Program

Date: May 25, 2010

From: M.J. Davis
Senior Compliance Inspector

Subject: Petition for reconsideration: Best available technology determination for treatment of spent activated carbon at the Umatilla Chemical Agent Disposal Facility

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This memorandum documents DEQ's review of the petition for reconsideration (Reference 1) of the best available technology determination (Reference 2) issued by the Environmental Quality Commission for treatment of spent activated carbon at the Umatilla Chemical Agent Disposal Facility.

Petition for reconsideration

Under the Oregon Administrative Rules, a party may file a petition for reconsideration or rehearing of a final order in a contested case with the agency within 60 calendar days after the order is served (OAR 137-003-0675). The subject petition for reconsideration was filed in a timely manner, and requests that, for treatment of carbon, "…a MPF [metal parts furnace] not be classified as BAT [best available technology] due to its indicated technical, institutional and environmental shortcomings and risks; but rather continue to consider Carbon Micronization as BAT, since it is the only technology with a proven and successful record of operation" (Reference 1).

Background

In February 1997, EQC and DEQ issued Permit No. ORQ 000 009 431 to the Umatilla Chemical Agent Disposal Facility for the storage and treatment of the Umatilla Chemical Depot chemical weapons stockpile. As part of the permitting process, EQC ensured and verified that several regulatory statutes (ORS 466.050, 466.055[1]-[5]) had been met (Reference 3). As identified above, ORS 466.055(3) requires that DEQ determine, and EQC must find, that the proposed facility uses the best available technology for treating agent-filled munitions and bulk items and the resulting secondary wastes. The commission and DEQ developed the following criteria (References 3 and 4) from which to make a best available technology determination of the technology proposed for the Umatilla Chemical Agent Disposal Facility - incineration. These criteria were established primarily to compare the baseline incineration process in the U.S. Army's application to alternative technologies that were then in development.

Best available technology criteria

1. Types, quantities, and toxicity of discharges to the environment by operation of the proposed facility compared to the alternative technologies.

2. Risks of discharge from a catastrophic event or mechanical breakdown in operation of the proposed facility compared to the alternative technologies.

3. Safety of the operations of the proposed facility compared to the alternative technologies.

4. The rapidity with which each of the technologies can destroy the stockpile.

5. Impacts that each of the technologies have on consumption of natural resources.

6. Time required to test the technology and have it fully operational; impacts of time on overall risk of stockpile storage.

7. Cost.

Based on information reviewed by DEQ from the Department of the Army and Ecology and Environment, an independent subcontractor to DEQ, (Reference 5), DEQ made a determination (Reference 6) and EQC issued a finding (Reference 3) that incineration was the best available technology for disposing of the Umatilla Chemical Depot stockpile as well as the secondary wastes that would result from the treatment of the chemical weapons, and would not present a major adverse impact to public health/safety or the environment.

In September 2007, the commission determined that the best available technology for treatment of secondary wastes was incineration in the metal parts furnace and deactivation furnace system, with micronization for treatment of spent carbon (Reference 7), obviating the need for construction and operation of a dunnage incinerator. EQC also considered, in the secondary waste best available technology determiniation, the option of off-site shipment and treatment of secondary wastes, but concluded that "[o]ff-site shipment increases risk to workers and transportation risks, and is opposed by key stakeholders such as the Confederated Tribes of the Umatilla Indian Reservation" (Reference 7). In September 2008, EQC determined that mercury-contaminated spent carbon must remain in storage at the Umatilla Chemical Agent Disposal Facility until a best available technology determination addresses its disposition (Reference 8).

In February 2010, EQC issued a final order (Reference 2) determining a best available technology for treatment of spent activated carbon. The determination made a number of findings, including:

- The metal parts furnace is the best available technology for treatment of agent-contaminated spent carbon at the Umatilla Chemical Agent Disposal Facility.
- Sulfur-impregnated spent carbon is expected to be agent-free. After confirming that it is agent free, the BAT for treatment of agent-free sulfur-impregnated carbon is to manage it as routine hazardous waste, shipping it offsite for treatment as needed and then disposal.
- New information shows that treatment of agent-contaminated spent carbon in the deactivation furnace system with carbon micronization presents the potential for

operational difficulty and safety risk, and is, therefore, not the best available technology for treatment of agent-contaminated spent carbon.

- Because the volume of agent-contaminated spent carbon is significantly smaller than originally anticipated, the metal parts furnace is a viable alternative to the deactivation furnace system with carbon micronization for treatment of agent-contaminated spent carbon.

Analysis of petition for reconsideration

The petition for reconsideration (Reference 1) provides a summary of eight key DEQ responses to public comments and issues that the petitioner has requested the commission reconsider.

1. DEQ states that metal parts furnace has been used successfully to treat other classes of secondary wastes.

   Petitioner's issues that should be reconsidered: Treatment of other secondary wastes in the metal parts furnace does not mean that it can effectively and efficiently destroy agent-laden activated carbon. The deactivation furnace system and carbon micronization system design capitalizes on reduction of the carbon particle size, combined with co-mixing of propane and carbon, which will increase effectiveness and efficiency.

   DEQ response: The effectiveness and efficiency of the deactivation furnace system and carbon micronization system considered by the DEQ in the original evaluation of technologies. Although the metal parts furnace may not offer as rapid a destruction rate as the deactivation furnace system and carbon micronization system, other factors, such as safety and time required for implementation, weighed heavily in favor of the metal parts furnace. After considering all seven best available technology criteria, DEQ recommended use of the metal parts furnace as best available technology for agent-contaminated carbon.

2. DEQ states that the length of the volatilization process will be determined through requirements of a future permit modification process and trial burn.

   Petitioner's issues that should be reconsidered: Based upon the principles of combustion, the smaller a fuel particle is the faster and more efficiently it burns. Complete burn-out times in a metal parts furnace will probably be measured in hours, not minutes or seconds.

   DEQ response: The effectiveness and efficiency of the deactivation furnace system and carbon micronization system were considered by DEQ in the original evaluation of technologies. Although residence times are expected to be longer in the metal parts furnace than the deactivation furnace system and carbon micronization system, the requirements for adequate treatment remain. The trial burn will be used to establish operating parameters to ensure complete combustion.

3. DEQ indicates that a trial burn will be planned and conducted to demonstrate the effectiveness of the metal parts furnace.

Petitioner's issues that should be reconsidered: Absolute requirements to achieve complete carbon burnout include: micron-sized carbon particles, vigorous air turbulence and co-mixing of propane or natural gas. These features are not available in a metal parts furnace; thus, restricting its combustion efficiency for activated carbon.

DEQ response: The effectiveness and efficiency of the deactivation furnace system and carbon micronization system were considered by the DEQ in the original evaluation of technologies. DEQ acknowledges that residence times in the metal parts furnace are expected to be longer to ensure that complete combustion occurs. Although the metal parts furnace may not offer as rapid a destruction rate as the deactivation furnace system and carbon micronization system, other factors, such as safety and time required for implementation, weighed heavily in favor of the metal parts furnace. After considering all seven criteria, DEQ recommended use of the metal parts furnace as best available technology for agent-contaminated carbon.

4. DEQ indicates that any option selected for treatment of agent-contaminated carbon must undergo a trial burn to demonstrate treatment standards.

   Petitioner's issues that should be reconsidered: The metal parts furnace is not a proven technology because of the limited capabilities and efficiency of a metal parts furnace and because trial burns will be required.

   DEQ response: Although residence times are expected to be longer in the metal parts furnace, the requirements for adequate treatment remain. The trial burn will be used to establish operating parameters to ensure complete combustion. Trial burns are required for hazardous waste incinerators and would be required even if the deactivation furnace system and carbon micronization technology had been selected as best available technology.

5. DEQ states that it gives "substantial consideration" to the National Research Council "concerns" and "problems" regarding the use of the deactivation furnace system.

   Petitioner's issues that should be reconsidered: The concerns and problems identified by the National Research Council are incredibly subjective, vague, disingenuous and misleading. The National Research Council failed to support their assertions regarding the carbon micronization system.

   DEQ response: DEQ acknowledges the position of the commenter. Conflicting views concerning the National Research Council's analysis were taken into consideration in the original best available technology recommendation. DEQ believes the concerns raised by the National Research Council remain a factor weighing in favor of the metal parts furnace as best available technology.

6. DEQ notes that determination of agent-free status for the pollution abatement system filters must be confirmed by specific analytical data, the requirements of which will be established through a permit modification process. DEQ indicates any technology selected for best available technology must achieve acceptable destruction removal efficiencies of 99.99

percent. A metal parts furnace demonstration will ensure that complete combustion is achieved.

Petitioner's issues that should be reconsidered: It seems that DEQ has already presupposed that only about seven percent of the total quantity of spent carbon will require on-site disposal. Since seven percent is a "small" quantity, it appears that DEQ justifies using a metal parts furnace. It seems that DEQ has already presupposed that the metal parts furnace will achieve acceptable destruction removal efficiencies even though future demonstration tests are necessary and two earlier tests by the Army indicated that treatment in the metal parts furnace is not adequate.

DEQ response: DEQ bases its estimate of the quantity of carbon that is expected to require treatment on process knowledge and the results of continuous in-line monitoring. The UMCDF will take representative samples of carbon, thought to be agent-free, for verification. Although residence times are expected to be longer in the metal parts furnace, the requirements for adequate treatment, and acceptable destruction removal efficiencies, remain. The trial burn will be used to establish operating parameters to ensure complete combustion.

7. Permit Modification Request 09-012 outlines a statistical probabilistic procedure for sampling of spent carbon to determine agent-free status. DEQ indicates that specific sampling requirements will be established through a future permit modification process, including public comment period.

   Petitioner's issues that should be reconsidered: The sampling process proposed in permit modification request 09-012 is inadequate, resulting in a 19 percent chance that some drums might contain agent. This is comparable to "rolling dice" with double-down gamble risks to Oregon's environment, public health, and potentials for spillage on highways.

   DEQ response: DEQ notes that PMR 09-012 addresses sampling and analysis requirements for agent on a carbon medium. As such, it is related to the carbon best available technology determination, but is not part of the determination. The adequacy of the proposed sampling and analysis approach is being addressed through the permit modification process. As a means of ensuring that the sampling is representative of the total population, DEQ recently issued a Notice of Deficiency (Reference 9) on PMR 09-012, requesting additional information on representative sampling.

8. The $18.2 million cost of a carbon micronization system includes contracts, footprint and design, engineering evaluation of hazards, siting, closing impacts, permitting, construction, procedure and training development and readiness review.

   Petitioner's issues that should be reconsidered: DEQ is partially justifying best available technology for a metal parts furnace based on its suggested lower cost, as compared to the carbon micronization system. It would be reasonable for EQC to request a breakdown budget list to quantify and justify these costs, rather than a vague total that cannot be compared to any meaningful criteria.

DEQ response: Cost estimates for all technologies were provided to DEQ by the Army. DEQ considers the Department of the Army's cost estimates to be a reliable indicator of expected cost.

Summary

DEQ carefully deliberated the original best available technology recommendation and considered all of the information provided by the petitioner in his comments (Reference 10) during the BAT process. No significant new information was provided by the petitioner's request for reconsideration.

Public comments

A public comment period is not required for a petition for reconsideration.

DEQ recommendation

DEQ recommends that the EQC deny or take no action on the petition for reconsideration.

References:

1. Letter from Richard T. Sheahan, MicroEnergy Systems, Inc. to Oregon Environmental Quality Commission, Petition for Reconsideration of the Final Order Determining BAT for Treatment of Spent Activated Carbon, April 16, 2010. DEQ Item 10-0469
2. EQC, February 19, 2010, Final Order Determining Best Available Technology for Treatment of Spent Activated Carbon. DEQ Item 10-0223
3. EQC, February 10, 1997b, "Findings and Conclusions of the Commission and Order in the Matter of the Application of the United States Army for a Permit to Construct and Operate a Chemical Weapons Demilitarization Facility at the Umatilla Chemical Depot." DEQ Item 98-1458
4. Environmental Quality Commission (EQC), August 23, 1996a, "Minutes of the Two Hundred and Fifty-Fourth Meeting." DEQ Item 98-1379
5. Ecology and Environment, Inc. (E & E), November 1996, "Best Available Technology Findings Report: Umatilla Chemical Depot, Hermiston, Oregon," prepared for the State of Oregon Department of Environmental Quality (DEQ), Seattle, Washington. DEQ Item 1386
6. EQC, November 22, 1996b, Minutes of Environmental Quality Commission Special Session. DEQ Item 2433
7. EQC, September 11, 2007, "Order Determining Best Available Technology for Secondary Wastes" DEQ Item 07-1382
8. EQC, September 4, 2008, "Final Order Determining Best Available Technology for Mustard Agent Containing Higher than Anticipated Levels of Mercury" DEQ Item 08-0994
9. Department of Environmental Quality, May 5, 2010, "Notice of Deficiency, Class 2 Permit Modification Request UMCDF-09-012-WAP (2/reclassified 3), Spent Carbon Waste Determination." DEQ Item 10-0541

10. Letter from Richard T. Sheahan, MicroEnergy Systems, Inc. to Oregon Department of Environmental Quality, Response to the Best Available Technology Determination: Treatment of Spent Activated Carbon at the Umatilla Chemical Agent Disposal Facility, January 4, 2010. DEQ Item 10-0004

cf: M.J. Davis, DEQ Hermiston