

Ravenna Army Ammunition Plant  
Restoration Advisory Board (RAB)  
Meeting Minutes  
September 20, 2000

1. Call to Order and Reading of the Minutes

The meeting was called to order by Lt. Col. Tom Tadsen (Community Chairman) at the Paris Township Hall in Paris, Ohio at 6:09 p.m. Due to the amount of material to be covered by the guest speaker and the issue of new members, it was decided that any motions for comments or corrections to the minutes would be entertained at the end of the meeting. Secretary Denise Gilliam took non-verbal attendance with 19 members present, 1 excused, and 1 absent (Mrs. Marti Long). The Portage County Board of Commissioners replaced Mr. Mark Griffiths with Ms. Kerry Macomber.

2. General Business

Lt. Col. Tadsen opened the floor for Ms. Nina Miller to discuss the status of new applicants for the four open RAB positions. Ms. Miller began by stating that four individuals had applied to the RAB, unfortunately one of the applicants passed away suddenly, leaving only three choices. Ms. Miller explained that she had read all of the applications and had talked to two of the prospective members. She stated that she had a strong feeling that two of the applicants would make good additions to the RAB: Mr. Robert Daughtery and Mr. Floyd Banks. According to Ms. Miller the third applicant, Mr. Delbert Woloski had not been available for a telephone interview with her so at that time she was reluctant to recommend him. Ms. Miller then asked if any of the applicants were present at the RAB meeting. Mr. Daughtery and Mr. Woloski were present. Ms. Miller stated that seeing as Mr. Woloski was present perhaps she could ask her questions now. Mr. Woloski agreed. Ms. Miller asked why Mr. Woloski was interested in the RAB, he replied that he would like to help, make sure that things are done right and provide input. Ms. Miller asked Mr. Woloski if he had any specific environmental interest, he replied that he did not have any and would just like to help out for the sake of community involvement. Ms. Miller then asked if the RAB members had any further questions. There were no additional comments or questions. Ms. Miller then mentioned to the RAB that she knew of two other people interested in participating with the RAB. Mr. Thomas Smith made a motion that all three of the applicants be admitted to the Restoration Advisory Board. The motion was seconded by Mr. Walter Landor and carried. Let the record reflect that Ms. Eileen Mohr (Ohio EPA) and Mr. Mark Patterson (Army Co-Chair) abstained from the vote.

3. Presentation - Mr. Steve Butler

Lt. Col. Tadsen introduced the evenings guest speaker Mr. Steve Butler of the U.S. Army Corps of Engineers Hazardous Toxic Radioactive Waste Center of Expertise. Mr. Butler discussed the applicability of solidification and stabilization, the regulations governing the application, a description of the various technologies used and presented case histories to the RAB. He began by using a superfund site in Arizona as an example of solidification/stabilization. Basically the concept is mixing the contaminate with an agent that will solidify the contaminant so that it cannot escape into the environment. He presented a slide show that showed the objectives of solidification/stabilization. The objectives of the procedure are to improve the handling and physical characteristics of the waste, limit the solubility of the hazardous constituents by chemical or physical reactions. This is generally accomplished using cement. The goal being to cause a reaction that will limit the solubility of the contaminate. By

solidifying the contaminant the hope is to decrease the surface area to reduce the leaching of the contaminants. Mr. Butler urged the RAB to keep in mind that this process does not destroy the contaminants. Mr. Butler stated that it is the last best effort to "lock up" contaminants. This process has been used in 25% of all superfund projects. Solidification entails locking contaminants within a solid matrix so that they cannot be exposed to the environment. The stabilization process occurs because the contaminants are not as soluble or mobile due to the chemical or physical reactions. The key is to reduce the contaminant's solubility. This happens by adding cement to the contaminant so that it becomes a more solid structure and by adding other agents to it that will cause a chemical reaction. Mr. Butler stated that there are many types of contaminants that can be treated using this process. These include metals, inorganics, radioactive wastes and organics.

The five most common metals found on RVAAP, are chromium, cadmium, lead, arsenic and antimony. He explained that the lead commonly comes from ammunition and batteries, the cadmium from batteries and plating, the chrome from plating, the arsenic from wood preservative and corrosion inhibitor, and the antimony was used because of its flame retardant qualities. Mr. Butler explained that antimony was not generally found in large amounts. He went on to explain that metals need to be solidified because they cannot be destroyed using treatment methods such as bioremediation and incineration. The hazards associated with the metals include: Lead - neurological, kidney, anemia, Cadmium - liver, kidney, bone marrow, Arsenic - gastrointestinal tract, heart, brain, and kidneys, Chrome - is a carcinogen, Antimony - traits similar to Arsenic. Metals do not break down in nature, they tend to absorb in clays and organics, they are not very mobile in soil and are not soluble. They will bioaccumulate, meaning that they collect in the systems of animals. Mr. Butler stated that Mr. Mark Patterson could probably explain more about that. Mr. Patterson stated that ecological truthing was going on now and that the findings have not been received as of yet.

Mr. Butler stated that the most common type of solidification and stabilization method used was that of adding cement to the contaminant to "lock" it up. Fly Ash is also used. It is considered the "poor man's" concrete and is derived from burned coal. This is a very common ingredient because it is cheaper than just using cement. Most of the fly ashes will not harden by themselves so they are often mixed with cement. The regulations governing the use of this process are: Resource Conservation and Recovery Act (RCRA), Hazardous and solid Waste Amendments of 1984 (HSWA), Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), and Superfund Amendments and Re-authorization Act (SARA).

Metals can be toxic in high concentrations. The EPA determines the hazardous characteristics by using a TCLP test. TCLP stands for Toxic Characteristic Leaching Procedure. Mr. Butler showed a slide with a picture of the machine that performs this test. In the TCLP a sample of soil is placed inside of a container and filled with an acidic solution. The device rotates for 18 hours at 30 rpms. A sample of the fluid is taken and tested to see how much of the metal has leached out. 5 milligrams per liter is the level that they use to determine if lead is hazardous. After treatment, the contaminated material is retested using the TCLP procedure to verify that it is no longer hazardous. Mr. Butler explained that leaching tests are not directly applicable to leaching in the field. The results of several leaching tests and some physical tests can be used as indicators of field performance. After being treated soils will probably be stored in a landfill either on or off site. The TCLP is a very rigorous test, and not reflective of actual environmental conditions.

In order for this process to be utilized there are two steps that must be taken: Site Characterization and Treatability Studies. Site characterization procedures are used to determine the site's physical and chemical characteristics. Physical properties such as moisture content, suspended solids, bulk density, grain size distribution, Atterberg limits (what the clay is like, i.e.

dense, soft, sandy), cone index and unconfined compressive strength are often collected. The chemical tests determine how much contamination is out there and how much is leaching out (this is done via the TCLP). The next step, treatability studies, provides a basis for cost estimates (like how much cement will be needed to bind the contaminate), estimates volatile emissions, proves solidification/stabilization works, and determines volume increase (most material will have a 20 to 25% bulking factor, this is important when it comes to determining where the material will be stored). The important criteria for contractors attempting to perform this procedure is the leachability of the contaminant (TCLP), the strength (relatively solid), permeability and durability (not commonly used) and the volume increase (especially limited if the storage is on site). The factors used in selecting an immobilization process/system includes, waste characteristics, immobilization technology available, site characteristics (i.e. is it easy to dig up?, where is the water table?, is it muddy?, etc.) and regulatory criteria (how well does it have to be cleaned).

The cost and production rates range from \$40 to \$200 per cubic yard (depending on volume increase). Exsitu (above ground mixing) generally can treat 200 to 1500 cubic yards per day. Insitu (in ground mixing) can treat approximately 200 cubic yards per day. The most common methods of solidification/stabilization are:

- Pug Mills (an above ground process that mixes the contaminated materials, treatment reagents, and water in a container using mixing blades),
- Exsitu Mixing or Backhoe Process (utilizes a standard backhoe equipped with a mixing device to mix reagents into contaminated soil on the ground surface) and
- Insitu Mixing (uses a large diameter auger to mix the soil and treatment reagents in place as the auger digs down into the contaminated material at the same time treatment reagents are continually being injected. ).

Mr. Butler next explained the use of pug mills in more detail. He had a slide that showed the entire machine and its operation. He used as an example a pug mill set at Davis-Monthan Air Force Base in Tucson, AZ. In this process contaminated soils are extracted and ran through a shaker screen. The remaining soils are then mixed with water and a reactant agent. The soils are generally run through 2 pug mills. The second mill contains cement or fly ash. When the soil comes out it will be stock piled and tested for contamination level. This entire process requires high levels of quality control. The processors must be aware of how much cement was added , etc. After the contaminated soils are removed the pit will be tested to ensure that all of the contamination has been eliminated. Pug mills are a more expensive way of treating contaminated soils. One thing that should be kept in mind is that at the end result of this process is not normally a huge brick of concrete. Just enough concrete is used to bind up the contaminants. At this point Mr. Butler showed slides from various superfund sites. These slides depicted Insitu and Exsitu solidification and stabilization as well as an example of a pug mill in operation. These slides include the storing of treated material on the sites. Mr. Butler stated that liners were placed down in the landfills and sump wells were in place to collect any leaching that might occur.

Mr. Butler opened for questions at 7:08. Mr. Todd Fisher, Ohio EPA, asked if this process was the same as soil vitrification. Mr. Butler replied in the negative and stated that process included heating the soil up. Ms. Rachael Craig: Does this method call for later testing or follow up? Mr. Butler: If they take it off site they probably will do some follow up testing. If they stay on site there will be ground water testing. Mr. Daughterty asked where do they normally hold the soil after it has been processed? Mr. Butler replied that it depended on how much you have. If you have a large amount they will probably keep it on site. Mr. Daughterty asked where do they take it off site. Mr. Butler replied that if it is treated and it is no longer hazardous, hopefully it can take it to a municipal landfill. He went on to state that is why quality control is so important. When asked if the landfill would be performing testing, Mr. Butler

replied that normally they will just review your results. Ms. Craig stated that fly ash itself was contaminated and asked Mr. Butler to confirm. He stated in the affirmative and explained that is why it should be tested to determine the levels. Ms. Craig remarked that fly ash contains quite a bit of contaminants. Mr. Markov asked if the treated solid soil could be used as a building material, like for a super highway. Mr. Butler replied that sometimes the material has been used for parking lots or for building foundations, but more often than not nothing is done with it. Mr. Markov asked why could not a profit be made off of using the material. Mr. Butler stated that there generally is a stigma attached to the substance and the public normally does not want it in their back yards. Mr. Abercrombie asked if solidification had ever been used at Ravenna, Mr. Patterson replied not that he was aware of. Ms. Craig asked when will the decision be made as to which method will be used. Mr. Patterson replied in fiscal year 2001. He went on to say that one of the projects is to do a feasibility study at Winklepeck. With the data that will be coming out in the near future, we will be able to determine what technology is best for Ravenna. Solidification is one of the front runners for clean up technology and would be the most cost effective. Mr. Patterson went on to say that the extent of contamination would be a factor. He stated that in order for this process to be worthwhile they might need to stockpile soils and combine AOCs. It might take three to five years to accumulate enough soil. Ms. Craig asked if there was an estimate on the amount of soil that needs to be treated. Mr. Patterson replied not at this time, we will have to wait until the feasibility study is completed. Mr. Landor asked if the containers used to take soils to the landfill are properly sealed. Mr. Butler stated that all the containers would be lined with plastic. Mr. Landor asked if that wouldn't help sell it to landfill owners. Mr. Butler replied no that their main concern is if it meets hazardous contaminate standards. Ms. Craig asked if the TCLP test was the one used by the EPA. Ms. Mohr, Ohio EPA, stated that yes, that is the test that we use. She informed the RAB that the EPA used the Eptoxic test prior but now conducted the TCLP. She stated that there was not much of a difference between the two tests. Ms. Craig directed her next question to Mr. Patterson. She asked if the metals, particularly the chromium were from the plating process. Mr. Patterson replied affirmatively. He went on to say that the demolition of ordnance also has been shown to leave some lead and chromium. Ms. Craig asked where the plating had been performed. Mr. Patterson replied in the smaller sections of the load lines, such as load line #12. He also added that the chipping paint in the various buildings was also hazardous waste for lead. He said the paint chips had been gathered and tested and had failed the TCLP. Ms. Craig asked if the RAB had seen a presentation on the plating process. Mr. Patterson remarked, not as of yet. He stated that the annealing process wastes were taken to C block and dumped in an old rock quarry. He went on to explain that antimony has been discovered, since it was used as catalyst in some of the primary explosive mixes. Materials such as antimony sulfide were stored in Load Line #3 by the Defense Logistic Agency (DLA). Feral chrome is also stored there by the DLA. Lt. Col. Tadsen interjected that the Army was selling these stores off but that they are very regulated. Mr. Landor stated that chrome bumpers were made in Newton falls, they have chrome lakes, could the solidification method be used to clean up those lakes. Mr. Butler replied that he was not familiar with the site, so could not speculate on how he would handle the clean up process. Mr. Butler closed at 7:27 p.m.

#### 4. General Business

Mr. Landor stated that in the May 17, 2000 minutes his name was spelled incorrectly (Waltor instead of Walter). The RAB Secretary annotated the change. Mr. Smith made the motion to accept the change in the minutes, seconded by Mr. Landor, all in favor. The minutes were so amended.

Mr. Kern asked when the new consultant, URS, would be attending the RAB. Mr. Patterson replied that money will become available after October 1<sup>st</sup>, so after that they could begin utilizing them. Mr. Kern asked if at the next RAB meeting the board could receive an update on the composting project. Mr. Patterson stated that all of the data from the pilot study

was not in as of yet, but as soon as it became available the RAB would be informed of the findings. Mr. Kern suggested that everyone introduce themselves to the new members. Mr. Daughtery (a new member) is a member of the coast guard and has handled a lot of oil spills. He stated that he has learned a lot at this RAB meeting and hopes to make an impact. Ms. Craig asked for an updated list of members. This list will be included with these minutes. Mr. Landor thanked Mr. Butler for a very interesting presentation. Mr. Markov asked the status of railroad removal at the arsenal. Lt. Col. Tadsen replied that the removal was almost complete. All of the rail scheduled for removal has been removed. Some of the rail will be maintained for the use of the guard in support and deployment of various missions. Mr. Markov asked if the rail beds were still being maintained. Lt. Col. Tadsen replied in the affirmative. Mr. Patterson introduced Mr. Jeff Robb, the new industrial specialist at RVAAP. Mr. Robb stated that his duties include supervising contractors at the arsenal and working on the rail project. His job, he stated, is to ensure that they (contractors) clean up and leave it like was. Ms. Barbara Andreas asked if Mr. Tim Morgan had left the arsenal. Mr. Patterson replied that Mr. Morgan will be hiring on with the State (Ohio Army National Guard) and would be leaving federal service. Mr. Landor asked if Mr. Morgan was still the head of the deer hunt. Mr. Patterson said yes, that Mr. Morgan was directly responsible for the deer hunts. Ms. Craig asked if Ms. Mohr was prepared to talk about the chromium found at the arsenal. Ms. Mohr replied that she could find someone to speak more eloquently on the subject. Ms. Craig informed Mr. Patterson that should be scheduled. Mr. Patterson replied that they were still awaiting more data on the subject but they should have it in the next six to nine months. He stated that at that point scheduling a speaker on chromium sounded like a good idea. Mr. Smith asked what kind of chromium was at the arsenal. Mr. Patterson replied that due to the fact that the source of the chromium was unclear, there really was not a way of knowing what kind was present. He went on to say that they will be taking samples to determine if chromium 6 or chromium 3 is present.

At this point Mr. Patterson suggested that the board discuss a possible topic for the next meeting. He suggested viewing the video made by MKM Engineer's Mark Vess regarding shape charges. Mr. Markov stated that he had read in the newspaper that workers at the arsenal had buried trash as far down as 20 or 30 feet at open demolition area #2.. Mr. Patterson stated that things were not buried that deeply. He stated that usually it was six to eight feet, due to the fact that any deeper they would hit bedrock. He went on to say that detonation would of course drive the material deeper down. He suggested having VISTA or Advent, the contractors who worked at the site, come to the RAB and talk about exactly what has been found. Ms. Craig stated that she has had a few requests for topics involving cancer issues. She stated that she wanted to have a more localized study. Mr. Patterson stated that Ms. Long, one of the RAB members not present, was looking into the issue. Her office had sent a letter to Mr. Robert Indian at the Ohio Department of Health. He stated that he was not aware of any response as of yet, but stated that he would contact Ms. Long for further information. Ms. Miller stated that she found the RAB tour very educational. She asked if the Biopad would stay hot enough in the winter to continue to be effective. Mr. Patterson said that Bioremediation had been performed at other plants and had succeeded even through the winter months.

## 5. Scheduling of the Next Meeting

Discussion on the date of the next meeting took place. It was decided that the next meeting would be held on November 16, 2000 at 6:00 p.m. (please note that this date falls on a Thursday instead of the customary Wednesday). The motion was made by Mr. Landor and seconded by Mr. Walton. The motion was passed 20 to 1, with one nay from Ms. Craig. The meeting will be held at the Windham Town Hall, Windham, Ohio

6. There being no further business Lt. Col. Tadsen moved to adjourn at 8:06 p.m., motion made by Mr. Smith, seconded by Mr. Landor and carried.

Respectfully Submitted,

Denise L. Gilliam  
RAB Secretary

DG/dg