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MCRD PARRIS ISLAND
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EMAIL OF TRANSMITTAL AND U S EPA REGION IV COMMENTS ON PUBLIC MEETING
POSTERS FOR PROPOSED PLAN FOR SITE 3 CAUSEWAY LANDFILL MCRD PARRIS
ISLAND SC
2/11/2011
U S EPA REGION IV

From: Llmas.Lila@epamail.epa.gov
To: Smith.Preston
Cc: amickms@dhec.sc.gov; USMCRD.Charles.Cook; frenchsl@dhec.sc.gov; GERRYAM@dhec.sc.gov; kriegkm@dhec.sc.gov; USMCRD.Lisa.Donohoe; Sladic.Mark; mmcrae@techlawinc.com; pat.franklin@mail.com; Churchill.Peggy; Sarah.Forrest@med.navy.mil
Subject: Re: Site 3 Public Meeting Posters
Date: Friday, February 11, 2011 10:29:26 PM
Attachments: [draft Site 3 Public Meeting Posters 020711 CM MM LL.ppt](#)
Importance: High

Hi Folks,

Attached here is part of EPA's comments. I had not realized Tim Frederick had not been copied on a lot of this stuff. He needs to look at these. At this point, I just assume he will give you his comments on the call on Tuesday.

Lila

-----"Smith, Preston" <Preston.Smith@tetrattech.com> wrote: -----

To: Donohoe Civ Lisa C <lisa.donohoe@usmc.mil>, "Sarah.Forrest@med.navy.mil" <Sarah.Forrest@med.navy.mil>, Meredith Amick <amickms@dhec.sc.gov>, Charles Cook <charles.cook2@navy.mil>, Annie Gerry <GERRYAM@dhec.sc.gov>, Kent Krieg <kriegkm@dhec.sc.gov>, Lila Llmas/R4/USEPA/US, Mac McRae <mmcrae@techlawinc.com>, "Churchill, Peggy" <Peggy.Churchill@tetrattech.com>, "Sladic, Mark" <Mark.Sladic@tetrattech.com>, Pat Franklin <pat.franklin@mail.com>, "Stacey French (frenchsl@dhec.sc.gov)" <frenchsl@dhec.sc.gov>
From: "Smith, Preston" <Preston.Smith@tetrattech.com>
Date: 02/07/2011 03:44PM
Subject: Site 3 Public Meeting Posters

Hi All,

Attached are the draft Site 3 Public meeting posters for your review. Please try to have your comments to me by the end of the week (Feb. 11th).

Thanks,

Preston

Preston Smith | Ecological Risk Assessor/Environmental Scientist III
Direct: 412.921.8167 | Main: 412.921.7090 | Fax: 412.921.4040
preston.smith@tetrattech.com
Tetra Tech, Inc. | Chemistry and Risk Assessment
661 Andersen Drive Foster Plaza No. 7 | Pittsburgh, PA 15220 | www.tetrattech.com

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[attachment "draft Site 3 Public Meeting Posters 020711.ppt" removed by Lila Llmas/R4/USEPA/US]



Site 3 – Causeway Landfill

MCRD Parris Island

- Reception and recruit training facility for the Marine Corps for enlisted men East of the Mississippi and for enlisted women nationwide



The Site 3 Causeway Landfill was used as a Landfill for trash and other debris from 1960 to 1972

- Causeway then established as a road connecting Horse Island to Parris Island and 3rd Battalion Pond was created



- Site 3 includes the original landfill, the causeway, and sediments within 200 feet of the 3rd Battalion Pond

From 1986 to 2000 various investigations were conducted at Site 3

- Investigations included soil, groundwater, sediment, and fish
- Results indicated that a remedial action was necessary to reduce risks to human health and the environment **from** exposure to soil throughout the landfill and sediment in four areas
- Potential risk from subsistence fishing from pesticides, mercury, and **polychlorinated biphenyls (PCBs)**.
- Contaminants of concern identified were: polycyclic aromatic hydrocarbons (PAHs), PCBs, pesticides, and metals in sediment and surface soil



Site 3 – Causeway Landfill

Interim Record of Decision Issued September 2000

- Presented **remedial action** alternatives **to mitigate exposure**
- Evaluated options for soil and sediment using a soil cover

Interim remedial actions were conducted between August 2000 and July 2001



- 1 ft of soil placed over contaminated sediment
- Up to 2 feet of soil placed over contaminated soil

- Protective fabric placed over soil
- 1 ft of rip-rap rocks placed on top to prevent ecological/human exposure
- Two lane roadway constructed on causeway to reduce precipitation and erosion
- Vegetation planted



Site 3 along the 3rd Battalion Pond of the causeway after the remedial action was complete

Following the remedial action, measures were taken to ensure human and environmental health was protected

- Sediment sampling after completion of work (October 2011??)
- Annual **leachate** sampling (**water underneath the landfill**)
- No unauthorized digging or construction activities
- No swimming or wading
- No residential development
- No groundwater use for drinking water
- No subsistence fishing from the pond



Site 3 – Causeway Landfill

A Proposed Plan – What is it?

- Presents the **Preferred Alternative/Final Remedy**
- Briefly summarizes the **results of investigations**
- Summarizes the** alternatives **evaluated**
- Highlights the key factors used in selection **of the remedy**

Summary of Recommendations

- ADOPTION OF THE INTERIM REMEDIAL ACTION (IRA) AS FINAL (with slight modifications)
- NO ACTION for Sediments (New)
- NO ACTION for Surface Water (New)
- MAINTENANCE of the Landfill Cover (New)
- MODIFICATION of Land Use Control – Signage
- ADDITION of Administrative Land Use Controls

How Do I Comment on the Site 3 Proposed Plan?

- Formal Comments from the Public are welcomed and help improve the Site 3 Proposed Plan
- Comment cards can be filled and submitted at the Comment Table (Station #4)
- Comments can also be mailed to MCRD Parris Island and South Carolina Department of Health and Environmental Control
- Comments must be received during the 60-day comment period ending April/May XX, 2011



Site 3 – Fish Study

Why was a New Fish Study Conducted?

- Information gathered by MCRD Parris Island personnel in 2008 indicated there could be people eating much more than one fish meal per week from 3rd Battalion Pond
- The Parris Island Partnering Team (Marines, Navy, USEPA, and SCDHEC) agreed that another 3rd Battalion Pond fish study was needed to determine if the fish are safe to eat

Fish Study Methodology

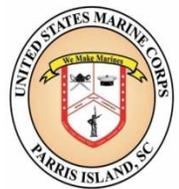
- Sampling followed USEPA guidance for fish consumption advisories (U.S. EPA, November 2000)
- One top predator species (red drum) and one bottom feeder species (mullet) were targeted
- Four areas in the 3rd Battalion Pond sampled and one area not affected by known contamination (General's Landing Creek)
- Not all of the fish met legal size limits
- Seven red drum, three black drum, and eight mullet were kept for analysis from 3rd Battalion Pond
- Four red drum, one black drum, and four mullet were kept from General's Landing Creek



Fish Tissue Analysis

- Fish were filleted and analyzed for the pesticide DDT and related chemicals, members of the PCB family of chemicals, mercury, and copper
- Fish samples were analyzed for **specific** PCBs (e.g. dioxin-like) during this sampling event
- PCB mixtures (Aroclors) were analyzed in fish previously





Human Health Risk Assessment

4-Step Human Health Risk Assessment Process

#1: Data Collection

- Collect and Evaluate Sampling Data
- Identify Chemicals of Potential Concern



#4: Risk Characterization

- Combine results from steps 1 through 3 to calculate potential increase to risks for developing cancer and for non-cancer health effects

Risks are compared to EPA guidelines to identify “acceptable” risks or “unacceptable” risks which require action

#2: Exposure Assessment

Identifies the following:

- How could people be exposed to the chemicals of concern?
 - Drinking water, contact with soil, eating fish, etc.
- Who will likely be exposed?
 - Residents, workers, visitors, etc.
- How often will people likely be exposed?
 - Everyday, once a week, etc.
- How long will they be exposed?
 - 6 months, 30 years, 70 years, etc.



#3: Toxicity Assessment

Values used to account for differences in toxic effects between chemicals – some require larger exposures to cause harm, others require much less



Risk Assessment Methodology Changes

Risks were revisited for two primary reasons:

- New Exposure Assumptions were used since current information indicated that some of the local population is eating much more fish than previously thought, thus, risks were revisited based on daily fish consumption over 70 years
- New analytical methods were used for analyzing specific PCBs (dioxin-like) to better evaluate PCB toxicity.



Risk Assessment Results

- Incorporating these two conservative approaches into the assessment resulted in a higher estimate of potential health risks than were calculated previously
- Potential risks were identified for adult subsistence fisherman, child subsistence fishermen, child recreational fisherman, and adult recreational fisherman
- These potential risks are mostly from the dioxin-like PCBs, but mercury also contributed to the overall risk

Fishing at the 3rd Battalion Pond

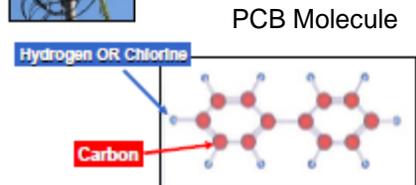
- MCRD Parris Island decided to prohibit fishing in the 3rd Battalion Pond ???when???
- The MCRD decision to increase the restriction from “No Subsistence Fishing” to “No Fishing” was made as a precautionary measure to ensure protection of health for local residents who might be eating fish from the pond at higher than FDA recommended rates
- At this time there is no plan to reevaluate the fish



PCBs

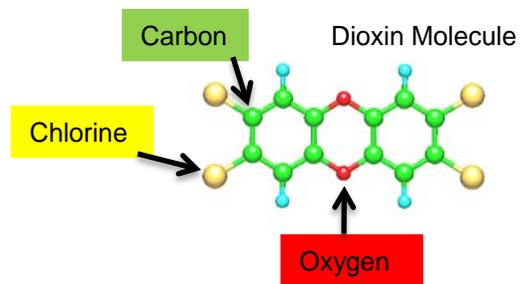
What are PCBs?

- PCBs, or polychlorinated biphenyls, invented in 1939
- Used all over the world in many products
 - Electrical transformers
 - Other electrical devices with PCB capacitors
 - Fluorescent light fixtures
 - Some paints **and caulks**
- Their production was banned in the US in 1977
- Made up of carbon, hydrogen and 1 to 10 chlorine atoms
- Aroclors **are** mixtures of PCBs



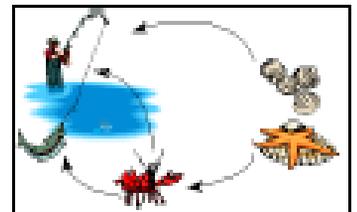
Dioxin-like PCBs

- Some PCB compounds have properties similar to dioxin
- Dioxin is a toxic compound found throughout the world from both manmade and natural processes.
- There are still many **uncertainties regarding the toxic effects of dioxin-like PCBs and the science continues to evolve.**



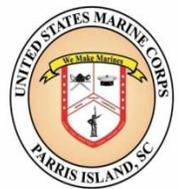
Movement and Interaction in the Environment

- Because of their widespread use and disposal of wastes in years past, PCBs are now common contaminants found in water bodies around the nation and the world.
- PCBs stick strongly to soil/**sediment** and do not dissolve in water easily
- PCBs build up in the bodies of animals (**e.g., bioaccumulates**)
- PCBs especially accumulate in fish and marine mammals
- **Due to their widespread presence,** nearly all fish and shellfish contain traces of PCBs.



Health Effects

- USEPA stated that PCBs are probably **carcinogenic** to people **based on animal studies**
- US Department of Health and Human Services stated that PCBs may reasonably be anticipated to be **carcinogenic** to people
- Exposed workers (before 1977) developed rashes, severe acne, and liver damage
- Children born to women exposed to high levels in the workplace or large amounts of contaminated fish weighed slightly less at birth and possibly slower motor development



Mercury

Where does Mercury come from?

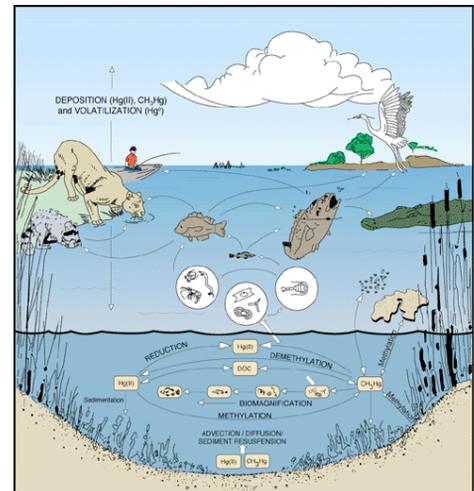
- Mercury is a metal that occurs naturally in the earth
- Used around the world
 - thermometers
 - electrical switches
 - dental fillings
- Has entered the environment through the burning of fossil fuels, **thus it is found world-wide.**



Movement and Interaction in the Environment

Elemental mercury released to the environment:

- Transformed to the more toxic bioaccumulating form called methylmercury
- Methylmercury can enter the food chain, or it can be released back to the atmosphere
- Like PCBs, methylmercury** especially accumulates in fish and marine mammals
- Nearly all fish and shellfish contain traces of mercury



Health Effects

- Affects the immune system
- Alters genetic and enzyme systems
- Damages the nervous system, including coordination and the senses of touch, taste, and sight
- The offspring of women who consume large amounts of fish and seafood, are at a high risk for neurodevelopmental effects due to in-utero exposure to methylmercury
- Some evidence that mercury also may pose a risk to some adults **???** **what kind of risk, neuro effects???**