



From: Chau, May T  
Sent: Mon Jul 05 18:33:24 2010  
To: Heron, Richard  
Cc: 'gkrieger@newfields.com'; Flower, David; Tremmel, Fred J; Martin, Alison (HSE); Dobbie, John M; O'Shea, Kevin J; Murray, Kate A; Saperstein, Mark  
Subject: RE: HHE Expansion and Biomonitoring  
Importance: Normal

Hi Richard,

In addition to Fred and David's notes, here are some more for your consideration.

Page 1 -- Introduction -- Federal health agencies (should you consider to include who they are?)

Page 3 -- **Step 3. Exposure Assessment, paragraph 2** -- Environmental and worker air sampling have....  
I agreed with Fred on using the word "contractor", and add "Bureau Veritas" and "Total Safety" in the sentence.  
In addition to Fred's comment, consider to remove the word "undetectable levels" and "far" in this sentence -- "undetectable levels, or levels far below established safe levels..." We are beginning to see numbers above the detectable levels, a small numbers meeting the NIOSH Recommended Exposure Limits. However, all validated exposures have been below the OSHA occupational exposure limits.

Page 3, paragraph 3 -- I recalled that we did have skin reaction to sun screen lotion, synergistic effects are still unknown?

Page 3 -- **Biomonitoring and Collection of Biological Samples, the last paragraph** -- Biomonitoring across all worker exposure categories for the more volatile components of crude oil, such as polycyclic aromatic hydrocarbons (PAHs), like naphthalene and non-PAH chemicals such as short-chain alkanes (should be "aliphatic compounds" not just alkanes), benzene, (consider to add "toluene, ethylbenzene") and xylenes....

Page 4 -- **Step 4. Toxicity Testing** -- Workers involved in the oil spill containment and cleanup efforts have reported upper and lower respiratory distress, headaches and dizziness. These symptoms suggest inhalation of crude oil constituents and oil dispersants aerosols may have health effects. Dermal exposure may also occur and be associated with local skin reactions and longer term systemic effects depending on the toxicity of oil and dispersant constituents.

Based on our worker monitoring data, NIOSH worker monitoring data during application of dispersants and OSHA worker monitoring data, dispersant data was detected during preparation of dispersant at source (offshore). Outside of source control area, dispersant data was related to cleaning solvents.

Page 4 -- **Step 5. Risk Assessment** -- Workers involved in various oil spill clean-up tasks may be exposed to toxic and carcinogenic compounds such as benzene, (consider to add "toluene, ethylbenzene, and xylene"--they fall in the toxic category and are being monitored by us as well as OSHA and NIOSH) naphthalene, and selected PAHs.

Page 5 -- **b. Health Screening during Response Work or Following Response Work (at Exit)** -- First, an interview will provide for each individual a more detailed description of the job duties, work schedules, (consider to add "work environmental conditions"), PPE use, and other measures of potential exposures which are needed to better characterize exposure potential by job duties and to identify subgroups for further follow-up. ....

Refer to Fred's comment in the note below -- In the Methods section, it might be clearer to state the date that Corexit 9527 use was discontinued, rather than "almost 2 months ago". The date was mid- to late

May, and should be easy to establish from the permitting records.

Corexit 9527 was discontinued in mid May but then was used again till the supply ran out. So, please check the permitting records.

Regards,  
May

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**From:** Flower, David  
**Sent:** Monday, July 05, 2010 9:48 AM  
**To:** Tremmel, Fred J; Heron, Richard; Martin, Alison (HSE); Chau, May T; Dobbie, John M; O'Shea, Kevin J; Murray, Kate A; Saperstein, Mark; Flower, David  
**Cc:** 'gkrieger@newfields.com'  
**Subject:** RE: HHE Expansion and Biomonitoring

Richard

Some additional thoughts:

p2 - training - relies on step 1 (rostering) but also relies on all organisations performing the training and employees taking it. the info we have had over the last few days of non-legitimate training being delivered makes this simple intent more complex

p3 para 3 - delete 'allergic' in reference to skin reactions

pp3-4 - biomonitoring - I am pleased with the objective and measured way that this section is written. However, it may be useful to consider other biological markers of effect (either here or in Step 6 health surveillance) - e.g. questionnaire assessment of number of people with history of allergic/irritant dermatitis before involvement in the spill clean up and after; likewise for non-specific headache (more subjective); baseline respiratory function tests. The odour that people are experiencing is real. Whether or not it has measurable levels of PAH/benzene etc etc is of course important, but it is certainly generating comments!

additional suggestion - tag workers on the census data base so that cancer cases can be tracked to see if there is an excess over the next 20+ years

Appendix A - I would want to know the power calculations for a sample size of only 75 with a 1:1 subject:control ratio

Kind regards  
David

**From:** Tremmel, Fred J  
**Sent:** 05 July 2010 10:09

**To:** Heron, Richard; Flower, David; Martin, Alison (HSE); Chau, May T; Dobbie, John M; O'Shea, Kevin J; Murray, Kate A; Saperstein, Mark  
**Cc:** 'gkrieger@newfields.com'  
**Subject:** RE: HHE Expansion and Biomonitoring

Richard,

I have the following comments:

On page 3, you refer to CTEH as a "non-governmental entit[y]". While this is true, it might be more clear to refer to them as a contractor; I would suggest adding Bureau Veritas to the sentence since they are doing the same kind of work as CTEH.

In the following sentence, I would suggest "indicated" rather than "demonstrated", and add the clarifying statement that the low exposures are outside the source control area (where there have been exposures high enough to warrant respirator use on occasion).

In the next paragraph, I suggest replacing "lung and skin contact" with "respiratory and dermal exposure". Similarly, under Biomonitoring, I suggest that the sentence be revised to read "all routes of exposure (*respiratory*, skin and gastrointestinal)". "Inhalational", as used later in the document, would also be acceptable, and preferable to "lung".

On page 5, I suggest hyphenating the term "case-control".

Perhaps it is just my own curiosity, but the statement regarding the Aguilera article, "collection of biological samples during the response" seems to beg the question of what kinds of biological samples might "establish the levels of individual internal exposure effects ..., especially those related to genotoxicity".

In the Methods section, it might be clearer to state the date that Corexit 9527 use was discontinued, rather than "almost 2 months ago". The date was mid- to late May, and should be easy to establish from the permitting records.

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**From:** Heron, Richard  
**Sent:** Monday, July 05, 2010 1:53 AM  
**To:** Flower, David; Martin, Alison (HSE); Tremmel, Fred J; Chau, May T; Dobbie, John M; O'Shea, Kevin J; Murray, Kate A; Saperstein, Mark  
**Cc:** 'gkrieger@newfields.com'  
**Subject:** Fw: HHE Expansion and Biomonitoring

All

Please do not circulate but do comment.

I have managed to secure early release of significant funding from GRI.

This is to enable base-lines to be set.

As you can see below, I am also at a relatively good stage with CDC/NIOSH in helping them shape a programme which can be run (with funding) from their charitable foundation.

Gary is drafting our "criteria for use"

I welcome your comments before Wednesday if possible, later if not

Richard

Kind Regards,

Richard

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**From:** Howard, John (CDC/NIOSH/OD) <zkz1@cdc.gov>  
**To:** Heron, Richard  
**Cc:** Kitt, Margaret (CDC/NIOSH/OD) <ajy8@CDC.GOV>  
**Sent:** Sun Jul 04 19:24:31 2010  
**Subject:** RE: HHE Expansion and Biomonitoring

Richard:

Happy 4<sup>th</sup> of July from the colonies! Our thinking has not been stagnant during the hiatus. Attached is

another draft—the 4<sup>th</sup> of July version—that reflects our recent thinking about how all the pieces we are doing fit together. I hope you like it. Happy to chat anytime. Safe travels!

Cheers!

JH

**From:** Heron, Richard [mailto:Richard.Heron@uk.bp.com]  
**Sent:** Sunday, July 04, 2010 10:23 AM  
**To:** Kitt, Margaret (CDC/NIOSH/OD)  
**Cc:** Howard, John (CDC/NIOSH/OD)  
**Subject:** RE: HHE Expansion and Biomonitoring

Margaret, John,

Hope you both managed a little time out this holiday weekend!

Some progress here on funding for base-line and basic science studies at least. Just had to switch PC's and most of my e-files not with me - Can you resend the original proposal you and John put together.

Wayne Carr will be making contact sometime this week to set up a call with you. I will be in Houston Monday evening thru Friday this week, which makes call timing a little more straightforward

Richard

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**From:** Kitt, Margaret (CDC/NIOSH/OD) [mailto:ajy8@cdc.gov]  
**Sent:** 02 July 2010 23:34  
**To:** Heron, Richard  
**Cc:** Howard, John (CDC/NIOSH/OD)  
**Subject:** HHE Expansion and Biomonitoring  
Hi Richard:

I just wanted to update you on NIOSH's plan to extend response worker exposure characterization and quantification by incorporating a feasibility study on biomonitoring as a part of the expanded HHE efforts BP has asked NIOSH to do. In light of air sampling yielding undetectable levels of toxins, or levels far below established limits, we are concerned about making sure the dermal route of exposure is well-characterized.

Also, as we heard from the IOM workshop last week, the topic of biomonitoring needs to be

addressed. We have a group within our NIOSH Division of Applied Research and Technology that have expertise in biomonitoring. There is also another group at CDC/NCEH with expertise in this area. Both groups have been working with Dr. Bruce Bernard to develop a scientifically sound protocol to use as a path forward. In fact, NIOSH would like to have the IOM review this protocol and provide input. We certainly will share the protocol with you once the draft is completed.

The major areas addressed in the draft protocol include:

- Enrolling 50-75 workers exposed to oil and 50 controls.
- Quantifying body burden using urine testing of poly-aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), and a metabolite of 2-butoxy-ethanol (used in Corexit 9527 discontinued almost 2 months ago); measure creatinine (to normalize urinary metabolite results) and cotinine (to help determine whether levels may be influenced by smoking or tobacco use):
  - o We would collect three urine samples: a pre-work shift, post-work shift on one work day and another post-workshift sample on another work day.
  - o We would have them complete a consent form
  - o Have them complete a short questionnaire, which would provide needed personal information and information on potential confounders, such as smoking history, 2<sup>nd</sup> hand smoke, other exposures to grilled foods and oils (lotions, tar shampoos, sunscreen, etc.).
- Measuring and comparing their urine levels pre- and post-work shift exposure, exposed and unexposed, and to previous studies of asphalt workers (exposed to PAHs) and petroleum workers, and general population results from the recent N-HANES study.
- Proposing that biomonitoring be conducted at the Plaquemines ICS (Venice Branch) in Venice, Louisiana.
- Our goal would be to determine whether the workers' body burden of these compound increased with exposure (within the limitations of confounders).
- The results will help determine if recommendations can be made to improve work practices, PPE efficacy, and safety procedures are needed.

We realize that implementation of the protocol presents a whole other level of logistical challenges. NIOSH will need the support of you and the rest of BP leadership to meet these implementation hurdles. Please let us know your thoughts.

Thank you and I hope your father-in-law's health has stabilized.

Margaret

Margaret M. Kitt, MD, MPH

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