EXHIBIT 5

From: O'Shea, Kevin J
Sent: Fri Jul 16 12:55:59 2010
To: Tremmel, Fred J; Dobbie, John M; Heron, Richard; Flower, David; Martin, Alison (HSE)
Subject: FW: [occ-env-med-l] Chemical Exposure Data for Gulf Cleanup Workers Dangerously Deficient
Importance: Normal

There are at least some who defer judgment until they know the facts...

From: bounce-27307105-6839408@listserv.unc.edu [mailto:bounce-27307105-6839408@listserv.unc.edu] **On Behalf Of** raycook@apexhse.com
Sent: Friday, July 16, 2010 7:47 AM
To: O'Shea, Kevin J
Subject: RE: [occ-env-med-l] Chemical Exposure Data for Gulf Cleanup Workers Dangerously Deficient

Greetings,

For the benefit of others on the list, please see the following expanded information regarding the exposure limits for the substances previously identified in this post:

- 10 benzene samples above the NIOSH REL of 0.1 ppm, potentially 5 times above

  2010 ACGIH TLV for benzene - 0.5 ppm - not presented

- Up to 210 2-butoxy ethanol samples potentially 2 times above the NIOSH REL of 5 ppm

  2010 ACGIH TLV for 2-butoxy ethanol - 20 ppm - not presented

- Up to 267 ethyl benzene samples potentially 5 times above the *proposed* ACGIH TLV of 20 ppm

  2010 ACGIH TLV for ethyl benzene - 100 ppm - not presented
  NIOSH REL - 100 ppm - not presented

- Up to 463 toluene samples potentially 5 times above the ACGIH TLV of 20 ppm

  NIOSH REL - 100 ppm - not presented

I think that it is incumbent upon us to make every effort to present data in a manner that is fair and impartial. Presenting data by choosing and reflecting only OELs that are the lowest given among varying agencies, without acknowledging the other values, at least to me, does not make it appear impartial, regardless of intent.

Not being on the ground at the forefront, I am not able to assess OSHA's or BP's ability to manage this effectively.

Kindest regards,

Raymond L. (Ray) Cook, Jr., MSIH, CIH, CSP
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I Cor 1:18

> -------- Original Message --------
> Subject: [occ-env-med-l] Chemical Exposure Data for Gulf Cleanup Workers Dangerously Deficient
> From: Eileen Senn <eileensenn@gmail.com>
> Date: Thu, July 15, 2010 7:46 pm
> To: Occ-Env-Med-L <raycook@apexhse.com>
>
> **Chemical Exposure Data for Gulf Cleanup Workers Dangerously Deficient**
> **Eileen Senn, MS**
> **July 15, 2010**
>
> OSHA and BP continue their steady stream of sweeping reassurances that the air in the Gulf poses no health hazard to Gulf cleanup workers. Their reassurances are based in large part on their measurements of workers' personal exposures to chemicals. I find both OSHA's and BP's worker chemical exposure air sampling data to be incomplete, unrepresentative, poorly documented, untimely, and misinterpreted.
>
> Potential chemical exposure sources in the Gulf include 1.5 to 2.5 million gallons of fresh crude each day, over 150 million gallons of crude in various stages of weathering, 22,000 gallons of fresh dispersant each day, 2 million gallons of dispersant used cumulatively, combustion products from burning 10 million gallons of crude, engine and vehicle fuel and exhaust, and detergents and cleaning products. OSHA and BP have not evaluated anticipated offshore worker personal exposures to respirable particulates, heavy metals, toxic gases, sulfur compounds, aldehydes, and Polycyclic Aromatic Hydrocarbons (PAHs).
>
> **OSHA Sampling Far From Spill**
>
> OSHA is air sampling onshore and nearshore for sixteen cleanup tasks with high potential for dermal exposure but low potential for airborne exposure. Fourteen of these tasks were designated for no respiratory protection from the outset. Sampling far from the spill, OSHA has found only a handful of workers with detectable personal exposures. Ninety-nine percent of OSHA's reported sampling has been below detection limits.

Note: Personal air sampling evaluates the air near a worker's nose and mouth. It is distinct from area air sampling, which is a screening tool. Dermal exposure is best evaluated not by air sampling but by visual observation of workers for activities that may cause chemicals to contact their eyes, skin, hair, gloves, shoes, or clothing.

Too Few Chemicals Sampled

In their summaries covering April 27 to June 1, 2010, BP reported sampling results for two specific chemicals – benzene and 2-butoxy ethanol, plus total hydrocarbons as a group. In July, BP reported personal sampling results for June for three additional specific chemicals –ethyl benzene, toluene, and xylene. This doesn't come close to being a complete list of chemicals in the Gulf. The vast majority of OSHA sampling has been for the same chemicals as BP plus cyclohexane and trimethybenzene.

Too Few Locations and Workers Sampled

OSHA has collected about 1,000 personal samples and BP about 7,000. BP's data does not provide locations, dates, or times for samples so we don't know how many specific locations or workers they have sampled. Until May 30, BP reported only offshore data. They now report offshore, nearshore, and onshore/beach data.

OSHA has reported personal sampling in about thirty locations onshore and nearshore on about ten days between May 27 and June 22. We can't easily tell how many workers have worn OSHA personal samplers from the way the data is presented, but I estimate about 100.

By comparison, there are 46,000 workers operating 121 aircraft and 6,850 vessels, including 2,710 Vessels of Opportunity, 530 barges, 580 skimmers, and 3,020 other vessels involved in the response Workers, vessels, and aircraft are on the move in an area one-third the size of Texas and on approximately 484 miles of Gulf Coast shoreline that is currently oiled—approximately 287 miles in Louisiana, 71 miles in Mississippi, 62 miles in Alabama, and 86 miles in Florida.

In addition, no two days in the Gulf thus far are likely to have been identical in terms of exposure variables, necessitating many samples every day.

Sampling Poorly Documented

BP and OSHA provide inadequate supporting information on sampled workers although OSHA does a better job than BP. Missing information includes cleanup tasks being performed, equipment and machinery being used, worker locations relative to sources of chemicals, and duration of hours in the exposure environment, either worked or off duty, for example, such as sleeping onboard a vessel. BP and OSHA both fail to provide relevant weather variables. BP fails to provide sampling and analytical methods.

Worst Exposures Not Sampled

BP and OSHA don't provide enough information to show that the worst worker exposures have been sampled, or even typical exposures. BP and OSHA don't make that claim or give any indication of how representative their sampling is of worker exposures. I suspect OSHA doesn't know and BP doesn't want to say.

Data Untimely

BP and OSHA both have a week or two gap between sample collection and reporting. BP has only provided five summaries in three months and they have become less and less frequent: May 20, 24, and 30, June 9, and July 6.

Data Misinterpreted

Both OSHA and BP misinterpret their air sampling to mean that the air in the Gulf is safe for all workers, everywhere, at all times.

Neither BP nor OSHA provides a narrative explanation and interpretation of their own sampling results, leaving stakeholders to try to figure it out for themselves. BP reports ambiguous ranges of results which often encompass levels both above and below exposure limits. BP invites misinterpretation of its data as a "Clean Bill of Health" by failing to make comparisons with the most protective occupational exposure limits. BP also fails to calculate and present additive exposures to chemicals when comparing sampling results with exposure limits.

BP Data Shows Potentially Dangerous Exposures

Despite its shortcomings, BP's data for April 27 to June 29, 2010 shows:

- 10 benzene samples above the NIOSH REL of 0.1 ppm, potentially 5 times above
- Up to 210 2-butoxy ethanol samples potentially 2 times above the NIOSH REL of 5 ppm
- Up to 267 ethyl benzene samples potentially 5 times above the proposed ACGIH TLV of 20 ppm
- Up to 463 toluene samples potentially 5 times above the ACGIH TLV of 20 ppm

BP has removed 179 2-butoxy ethanol samples from the July 6 summary, compared to the June 9 BP summary, which showed 43 samples on beaches - potentially double the NIOSH REL of 5 ppm.

Total Hydrocarbon Evaluation Criteria Bogus

One key to the success of the BP air sampling in misinterpreting data and keeping the use of respirators to a minimum is the lenient criteria used to evaluate measurements of total hydrocarbons. BP attempts to justify their 100 ppm total hydrocarbon action level in their July sampling summary:

> Fresh crude oil and weathered crude oil are comprised of a wide range of hydrocarbons including aliphatic and aromatic hydrocarbons. These combinations of hydrocarbons when sampled together are referred to as "total hydrocarbons". When monitored in combination in this manner, this analysis provides an indication of whether one or more particular hydrocarbon constituents may be elevated. If the total hydrocarbon analytical result is sufficiently low, that provides assurance that the individual constituents are also present at only low levels. Although there is no official occupational exposure limit for total hydrocarbons, BP has adopted its own internal guideline of 100 ppm as a limit which is generally considered to be a conservative level by the industrial hygiene community.

No basis for this last claim of conservatism is given. For total hydrocarbons as a group there can be no valid evaluation criteria because the identity of individual hydrocarbons present is unknown and there is no limit applicable to all the possible compounds combined. The only legitimate use of total hydrocarbon data would be to track trends over time.

Other Shortcomings

BP and OSHA both fail to provide limits of detection. I have not examined other possible technical problems with the accuracy of their data such as improper

calibration, interferences, methodological errors, or invalid sampling and analytical techniques.

OSHA and BP Must Do Better

Life and death decisions, including whether or not cleanup workers get respirators, are being made on the basis of air sampling in the Gulf spill. Therefore, we must hold OSHA and BP sampling to the standards laid out by NIOSH on July 2 in *Chemical Exposure Assessment Considerations for Use in Evaluating Deepwater Horizon Response Workers and Volunteers.*

OSHA must provide a narrative making it clear just how limited their sampling is and likely reasons they haven't found airborne contaminants.

BP must provide a much more detailed public summary of their air sampling results, including dates, times, specific worker locations and tasks, and sampling and analytical methods. BP must present trends in their data over time. BP must compare their data with the most protective occupational exposure limits and present additive exposures to chemicals when comparing sampling results with exposure limits. BP must stop using 100 ppm as the criterion for evaluating VOC levels. They must explain why 2-butoxy ethanol samples have been removed from summaries and when and if they will be returned.

OSHA and BP must both provide:

- Narrative qualitative exposure assessments for the Gulf spill cleanup, laying the basis for their air sampling plans.
- Narrative explanations of why they have sampled for specific contaminants in specific tasks and locations.

Above all, BP and OSHA must both stop proclaiming the Gulf air safe based on dangerously deficient data.

References

BP Sampling Data www.bp.com/genericarticle.do?categoryId=9033821&contentId=7062609

BP Respirator Policy
www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/incident_response/STAGING/local_assets/downloads_pdfs/Respiratory_Protection_Fact_Sheet_140610.pdf

OSHA Personal Protective Equipment Sampling Matrix www.osha.gov/oilspills/oil_ppematrix.html

OSHA Initial Sampling Strategy
www.osha.gov/oilspills/oil_samplingstrategy.html

OSHA Laboratory Analysis Results by Site
www.osha.gov/oilspills/oil_sltc_bysite.html

OSHA Direct Reading Results by Site
www.osha.gov/oilspills/oil_directreading_bysite.html

OSHA Sampling Map
www.osha.gov/oilspills/oilsamplemap.html

NIOSH Chemical Exposure Document
www.cdc.gov/niosh/topics/oilspillresponse/assessment.html

NIOSH/OSHA Respirator Recommendations
www.cdc.gov/niosh/topics/oilspillresponse/protecting/#c

Table of NIOSH/OSHA Respirator Recommendations
www.cdc.gov/niosh/topics/oilspillresponse/pperecsumm.html

Deepwater Horizon Response and Operations Summaries
www.deepwaterhorizonresponse.com/go/doctype/2931/53339/

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