Mr. S. E. Hudson, Chair
Hanford Advisory Board
Environissues Hanford Project Office
713 Jadwin Avenue, Suite 4
Richland, Washington 99352

Mr. Hudson:

REISSUE - HANFORD ADVISORY BOARD (HAB) FEBRUARY 8, 2013, CONSENSUS ADVICE #265, "INDEPENDENT EVALUATION OF PROCEDURES AND INDUSTRIAL HYGIENE EQUIPMENT USED TO MONITOR TANK VAPOURS AND FLAMMABLE GAS"

Thank you for advice #265 regarding an independent evaluation of tank farm vapors and flammable gas monitoring practices by the National Institute for Occupational Safety and Health (NIOSH) (enclosed). The U.S. Department of Energy (DOE) Office of River Protection (ORP) appreciates the effort and dedication of the Health, Safety and Environmental Protection committee to discuss, draft, and present this advice to the full HAB and ORP. ORP remains committed in our support of a robust occupational health program on behalf of all ORP operations. Protecting our workers, the public, and the environment is a top priority for the Department.

Below is ORP's response to the HAB's advice.

Advice Point: The Board advises DOE to continue its efforts to secure an independent evaluation by NIOSH of procedures and industrial hygiene equipment used to monitor tank vapors and flammable gas in conditions outside of the manufacturer's technical operating specifications and procedures.

Response: ORP recognizes and acknowledges the benefits of an independent evaluation by NIOSH and has initiated requests which have included telephone conversations, submittals of background information for review, and a formal request for a NIOSH Health Hazard Evaluation (HHE) via the NIOSH HHE online request form. The completed request form and confirmation of receipt are enclosed. NIOSH has also been in contact with the Washington River Protection Solutions (WRPS) Health and Safety management team for the purpose of acquiring additional information.
The ORP Safety and Health Division has conducted a technical review of related subject matter, to further facilitate an understanding of the issues and provide NIOSH an opportunity to comment. That document, entitled “Tank Farms Industrial Hygiene Exposure Monitoring and Screening Practices Relative to Instrumentation Specifications,” was provided to NIOSH, as was the WRPS Industrial Hygiene Instrumentation Root Cause Analysis draft report. Both final reports and the requested written response from NIOSH will be shared with the HAB, following receipt.

Thank you for your continued interest and if you have additional comments or questions, please contact Carrie Meyer at (509) 372-0810.

Kevin W. Smith
Manager

Enclosures:
1. HAB Advice letter #265
2. NIOSH HHE Online Request Form
3. Confirmation Receipt

cc w/encls: See page 3
cc w/encls:
C. B. Alexander, EM-3.2
D. A. Faulk, EPA
J. A. Frey, RL/ORP DDFO
M. A. Gilbertson, EM-10
J. Harney, NIOSH
S. Hayman, Enviroissues
J. Hedges, Ecology
W. M. Levitan, EM-10
T. L. Sturdevant, Ecology
Administrative Record
Environmental Portal
The Oregon and Washington Congressional Delegations

U.S. Senators (OR)
J. Merkley
R. Wyden

U.S. Senators (WA)
M. Cantwell
P. Murray

U.S. Representatives (WA)
N. Dicks
R. Hastings
J. Herrera Beutler
R. Larsen
J. McDermott
C. McMorris Rodgers
D. Reichert
A. Smith

State Senators (WA)
J. Delvin
M. Hewitt

State Representatives (WA)
L. Haler
B. Klippert
Dear Brian Harkins,

The following information has been submitted to NIOSH Health Hazard Evaluation Program:

**Workplace Name**
Hanford Nuclear Site: Tank Farms Facility

**Workplace Address**
US Department of Energy (DOE) Hanford Site Tank Farms Operations, Richland, Washington 99352

**What type of work is done at this location?**
The facility is a mixed hazardous waste Treatment, Storage and Disposal Facility involving 177 underground tanks, transfer lines & associated infrastructure. The total volume of waste is approximately 53 million gallons. Older single shelled tanks are undergoing retrieval & transfers of content to designated double shell tanks for feed to a waste treatment plant under construction and ultimate closure of all tanks. Workers support these activities through construction, maintenance, transfer operations and supporting tasks such as radiological and industrial hygiene monitoring.

**How many people work at this location?**
250 or more

**Who is responsible for employee health and safety in this workplace?**

**Name**
Brian Harkins (in behalf of Kevin Smith, Manager, US DOE Office of River Protection)

**Title**
DOE ORP Director of Health and Safety

**Phone number**
509 376-3567
What hazardous substances, agents, or work conditions are of concern?

If known, please include chemical names, trade names, manufacturer names, or other identifying information.

A screening process and headspace characterization serves as the technical basis for the sampling strategy in place at tank farms. This process resulted in the identification of 59 chemicals of potential concern (COPCs) listed below. The site has the ability to screen grab samples for all 59 COPCs, in addition to application of NIOSH methods for sampling and analysis. The primary COPCs subject to routine sampling for similar exposure groups include: 1-Butanol, 2,4-Dimethylpyridine, 3-Buten-2-one, Ammonia, Butyl nitrite Formaldehyde, Mercury, Methyl nitrite, Nitrosodiethylamine, Nitrosomethylamine, Nitrosamines, and Nitrous Oxide. Chemicals of Potential Concern from all Tanks Agent List CAS # GEL Units Inorganic Compounds 1 Ammonia 7664-41-7 25 ppm 2 Nitrous Oxide 1002-97-2 50 ppm 3 Mercury 7439-97-6 25 ug/m3 Hydrocarbons 4 1,3-Butadiene 106-99-0 1 ppm 5 Benzene 71-43-2 0.5 ppm 6 Biphenyl 92-52-4 0.2 ppm Alcohols 7 1-Butanol 71-36-3 20 ppm 8 Methanol 67-56-1 200 ppm Ketones 9 2-Hexanone 591-78-6 5 ppm 10 3-Methyl-3-buten-2-one 814-78-8 0.02 ppm 11 4-Methyl-2-heptanone 105-42-0 0.5 ppm 12 4-Methyl-2-heptanone 928-68-7 8 ppm 13 3-Buten-2-one 78-94-4 0.2 ppm Aldehydes 14 Formaldehyde 50-00-0 0.3 ppm 15 Acetaldehyde 75-07-0 25 ppm 16 Butanal 123-72-8 25 ppm 17 2-Methyl-2-butenal 1115-11-3 0.03 ppm 18 2-Ethyl-hex-2-enal 645-62-5 0.10 ppm Furans and Substituted Furans 19 Furan 110-00-9 1 ppm 20 2,3-Dihydrofuran 1191-99-7 1 ppm 21 2,5-Dihydrofuran 1708-29-8 1 ppm 22 2-Methylfuran 534-22-5 1 ppm 23 2,5-Dimethylfuran 625-86-5 1 ppm 24 2-Ethyl-5-methylfuran 1703-52-2 1 ppm 25 4-(1-Methylpropyl)-2,3-dihydrofuran 34379-54-9 1 ppm 26 3-(1,1-Dimethylethyl)-2,3-dihydrofuran 34314-82-4 1 ppm 27 2-Pentylfuran 3777-69-3 1 ppm 28 2-Heptylaldehyde 3777-71-7 1 ppm 29 2-Propylfuran 4229-91-8 1 ppm 30 2-Octylfuran 4179-38-8 1 ppm 31 2-[3-Oxo-3-phenylprop-1-etyl]furan 717-21-5 1 ppm 32 2-[2-Methyl-5-oxoheptyl]furan 51595-87-0 1 ppm 33 Diethyl Phthalate 84-66-2 5 mg/m3 Nitriles 34 Acetonitrile 75-05-8 20 ppm 35 Propanenitrile 107-12-0 6 ppm 36 Butanenitrile 109-74-0 8 ppm 37 Pentanenitrile 110-59-8 6 ppm 38 Hexanenitrile 628-73-9 6 ppm 39 Heptanenitrile 629-08-3 6 ppm 40 4-Methylene butanenitrile 1647-11-6 0.3 ppm 41 2,4-Pentadienitrile 1615-70-9 0.3 ppm 42 Amines 24 Ethylamine 75-04-7 5 ppm 1 of 2 12/03/2008 Nitrosamines 43 N-Nitrosodiethylamine 62-75-9 0.3 ppm 44 N-Nitrosodiethylamine 55-18-5 0.1 ppm 45 N-Nitrosomethyamine 10595-95-6 0.3 ppm 46 N-Nitrosomorpholine 59-89-2 0.6 ppm Organophosphates and Organophosphonates 47 Tributylphosphate 126-73-8 0.2 ppm 48 Dibutylbutylphosphonate 78-46-6 0.007 ppm Halogenated Hydrocarbons 49 Chlorinated Biphenyls, Volatiles 0.1 mg/m3 50 2-Fluoropropene 1184-60-7 1 ppm 51 Pyridines 110-86-1 1 ppm 52 2, 4-Dimethylpyridine 108-47-4 0.5 ppm Organonitriles 53 Methyl nitrite 624-91-9 0.1 ppm 54 Butyl nitrite 544-16-1 0.1 ppm Organonitrates 55 Butyl nitrate 928-45-0 2.5 ppm 56 1,4-Butanediol, dinitrate 3457-91-8 0.05 ppm 57 2-Nitro-2-methylpropane 594-70-7 0.30 ppm 58 1,2,3-Propanetriol, 1,3-dinitrate 623-87-0 0.05 ppm Isocyanates 59 Methyl Isocyanate 624-83-9 20 pp

How are employees exposed?
Breathing, Skin Contact

In what work area, such as a building or department, is the hazard?
Odors may be present within each of the tank farms and surrounding operations.

How many people work in this area?
250 or more

Describe the work people do in this area.
Construction, maintenance, equipment testing, transfer operations, environmental support, industrial hygiene and radiological monitoring.

What health concerns do employees in this work area have?
Some workers are quite concerned that fugitive vapor emissions are not conducive to characterization by an IH monitoring program and the unrecognized constituents of the vapors are adversely affecting their health. This request has been previously provided and discussed between DOE ORP and NIOSH representatives, via email correspondence and telephone conversations. Please provide written verification of receipt and basis for NIOSH's response regarding this request by DOE for purposes of documentation.
Information about you
Name: Brian Harkins

Address where we can send you information:
U.S. Department of Energy, Office of River Protection (ORP) 2440 Stevens Center MSIN H6-60 Richland, WA 99352

Phone number where you would like to be called:
509 376-3567 (O) 509 438-0483 (c)

Best time to call:
0700 - 1700 hours, PST

Email address where you would like to be contacted:
Brian_A_Harkins@ORP.doe.gov

Can NIOSH reveal your name to the employer?
N/A

Please check one:
Other: ORP Provides oversight of the Project

Second employee
Name: N/A

Address where we can send you information:
N/A

Phone number where you would like to be called:
N/A

Best time to call:
N/A

Email address where you would like to be contacted:
N/A

Can NIOSH reveal this name to the employer?
N/A

Third employee
Name: N/A

Address where we can send you information:
N/A

Phone number where you would like to be called:
Best time to call:
N/A

Email address where you would like to be contacted:
N/A

Can NIOSH reveal this name to the employer?
N/A

Complete this section if you are a union representative
Name of union:
N/A

Address:
N/A

What is your position in the union?
N/A

Complete this section if you are an employer representative
Name:
N/A

What is your position in the company, agency, or organization?
N/A

For everyone
Has another government agency evaluated this workplace?
Yes

If yes:
What agency?
DOE provides on-going health and safety oversight

What year was the evaluation done?
NIOSH performed an HHE in 2004 time frame

Check here if this evaluation is underway now
BLANK

Is a request for the hazard being filed with another agency?
No

If yes:
What agency?
N/A
How did you learn about the NIOSH Health Hazard Evaluation Program?
Other: Professional experience

Thank you for submitting this form. You will get a response within 10 days.
Brian Harkins  
U.S. Department of Energy, Office of River Protection  
2440 Stevens Center, MSIN H6-60  
Richland, WA 99352  

Dear Requestor:

The National Institute for Occupational Safety and Health (NIOSH) has received your request for a health hazard evaluation. The information below explains how we review requests and describes how we respond.

Each year, we receive about 400 health hazard evaluation requests. Our senior staff of occupational safety and health experts reviews each request. We discuss the severity and extent of the problem, our experience with similar problems, the availability of written materials that address the concerns, and whether we believe a field evaluation by NIOSH would be helpful in addressing your concerns. Our response to you may be an informational letter, a telephone consultation, referral to another agency (if you requested confidentiality, we will not reveal your identity to another agency without your consent), or an on-site evaluation.

Once your request has been reviewed, it will be assigned for response. You can expect to hear from us again by letter or telephone within 30 days. If you have any questions or concerns before then, please call me at (513) 841-4382 or ATepper@cdc.gov.

Sincerely,

/Allison Tepper, PhD/

Allison Tepper, Ph.D  
Chief  
Hazard Evaluations and Technical Assistance Branch  
Division of Surveillance, Hazard Evaluations and Field Studies