David P. Bleicher, MS., MSPH
Certified Industrial Hygienist
8136 Snipe Court
Juneau, Alaska 99801
(907) 321-4931
David@BleicherCIH.com

26 September 2010

CAPT Tim Radtke, CIH
Department of the Interior
Office of Occupational Health and Safety
755 Parfet Street
Suite 364
Lakewood, CO 80215

CAPT Radtke:

I have enclosed a report of exposure assessments for Jackson National Fish Hatchery as part of the DOI Exposure Assessment and Medical Surveillance Inclusion project. In the report you will find two attachments and guidance for reading and interpreting assessment results. One attachment presents the processes, tasks, and agents that were evaluated during the 12 May 2010 on-site visit with details of the associated exposure profiles that were developed. The other provides a health risk-based prioritized summary list of process-task-agent groups for control and further information gathering.

An Access database containing complete data and supporting documentation is available for download at www.BleicherCIH.com/DoIeA4TR.html (please note that the page address is case sensitive). This database file will be updated periodically as assessments and profiles are completed for additional facilities.

Please do not hesitate to contact me if you have any questions.

Sincerely,

David P. Bleicher, CIH

Enclosure: Jackson National Fish Hatchery Occupational Exposure Assessment

Jackson National Fish Hatchery
Occupational Exposure Assessment and Medical Surveillance Inclusion
For
Department of Interior, Safety Council/Office of Health and Safety
On-site: 12 May 2010

Exposure assessments have been conducted as a part of the Department of Interior's Exposure Assessment and Medical Surveillance Inclusion Determination initiative. The objective of this effort is to document work processes at DOI facilities, describe the individual tasks associated with those processes, identify hazardous agents that are used or generated during the task, and characterize employee exposure to those agents. The ultimate goal is to identify similarly exposed groups (SEGs) within and between bureaus in order to facilitate exposure management requirements including exposure control, validation of medical surveillance, and prioritized use of limited occupational health resources.

Methods.

Exposure assessments were conducted following the strategy set forth by the American Industrial Hygiene Association's Exposure Assessment Strategies Committee for assessing and managing occupational exposures[1].

An on-site visit to Jackson National Fish Hatchery was conducted on 12 May 2010 by David P. Bleicher, CIH to characterized selected processes and collect information needed to develop task-agent exposure profiles. A number of methods were available and used to gather this information. Characterization of processes, tasks, conditions and controls, and agent identification was obtained through observation of work sites and facilities, documentation of procedures, material safety data sheets, and importantly, worker interview. Data useful for estimating exposure was obtained through screening and short term measurement, historical sampling data, mathematical modeling, and the scientific literature.

Two reports are provided for this facility (Attachments A and B). One presents the processes, tasks, and agents that were evaluated during the site visit along with details of the associated exposure profile. The other is a health risk-based prioritized summary list of process-task-agent groups for control and further information gathering.

Task-Agent Exposure Profile Detail Report.

Task-agent exposure profiles are based on observation and employee description of processes. Due to the nature of many DOI missions, processes and tasks can be highly variable—task duration, frequency, and operating conditions can differ from one iteration to another. Therefore, process and task characterizations were frequently, and necessarily, reported as "typical" with a range of conditions described. Judgments about worker exposure are based on the tasks as presented in this report. When actual processes or the conditions under which they are carried out differ from those recorded, the exposure profile and classification should not be generalized without appropriate consideration of variables.

Reading the Report.

[1] Bullock, Wm.H. and J.S.Ignacio, Eds. 2006. A Strategy for Assessing and Managing Occupational Exposures, 3rd. AIHA Press, Fairfax.

The Task-Agent Exposure Profile Detail Report is arranged in hierarchical fashion by Division or Project, Process, Task, and Agent. Process entries include a brief description of the process and when appropriate, unique operating conditions. Task entries include a brief characterization of the task, a description of any controls in place, the duration and frequency of occurrence, and appropriate recommendations. It should be noted that many task characterizations and agent exposure profiles will immediately suggest rather obvious recommendations. Some of these have been included in the report. However, in many cases it would not be appropriate to make definitive control recommendations without more careful consideration of control strategies and factors that would affect their efficacy (e.g. design, economic, and cultural factors) which is beyond the scope of the exposure assessment project.

Exposure Profile. Information used to develop the exposure profile is found for each Agent under a Task. It is important to understand that the exposure profile accounts for engineered and administrative controls and reflects potential worker exposure in the absence of personal protective equipment such as respirators.

- Exposure Category: Exposures have been categorized as Acceptable, Unacceptable, or Uncertain.
- OEL: The Occupational Exposure Limit or OEL is the threshold value used as a standard for comparison with the exposure estimate. OELs may describe full shift or short-term acceptable or unacceptable exposure limits.
- Exposure Rating & Exposure Estimate: When possible the Exposure Rating is based on quantitative data which yields an Exposure Estimate. In practice, very little quantitative information is available to support a judgment. In the absence of strong quantitative data, it is often practical and reasonable to categorized an exposure as acceptable, unacceptable, or uncertain based on qualitative or semi-quantitative information. However, in these cases it is difficult to assign intermediate exposure ratings as a fraction of the OEL, therefore an exposure rating of 4 is assigned to clearly unacceptable exposures and a rating of 1 for those that are clearly acceptable.
- Health Effects Rating: The Health Effects Rating reflects both the severity and permanence of the health impacts of an unacceptable exposure.
- Uncertainty Rating: The Uncertainty Rating provides an indicator of the level of certainty associated with the exposure profile. For example; exposure estimates based on definitive monitoring studies would be highly certain while profiles based on screening measurement, mathematical modeling, data from similar activities, or qualitative judgment may add degrees of uncertainty. Other factors that may affect the industrial hygienist's assignment of an uncertainty rating are inadequate understanding of health impacts by scientific community and excessive generalization of the task activity or conditions during the characterization process.
- Basis & Discussion: The Basis for the estimated exposure, its assignment to an exposure category, and the factors affecting certainty is given. A brief Discussion of available information and factors leading to judgments about the exposure profile is also provided.
- Risk/Control Priority: A Risk/Control Priority is calculated as the product of the Health Effects Rating and the Exposure Rating. Ratings range from 0 for the lowest risk exposures to a high of 16.
- FIG Priority: When uncertainty exists in the exposure profile, further information gathering may be required to resolve it. FIG Priority is calculated as the product of the Risk/Control Priority and the Uncertainty Rating. Both the Risk/Control Priority and the FIG Priority values may be used to more efficiently direct resources to control exposures and resolve exposure questions. FIG priority ratings range from a low of 0 to a high of 32.

Medical Surveillance. The exposure profile provides validation of, or indicates justification for, medical surveillance programs. In the report, medical surveillance is Justifiable when the exposure category is unacceptable or uncertain. Note that justifiable means simply that an unacceptable (or uncertain) exposure is identified. It does not suggest that medical surveillance is required, needed or even useful. On the other hand, some exposures are designated as Triggered or Critical Exposures. For unacceptable or uncertain exposure to some agents, medical surveillance may be triggered or required by regulation. A critical exposure refers to unacceptable or uncertain exposure to an agent which may pose very severe and irreversible health effects if not controlled. Examples include potent human carcinogens.

David P. Bleicher, CIH
26 September 2010

Attachment A: Task-Agent Exposure Profile Detail Report
Attachment B: Health Risk and Further Information Gathering Priorities Report

Task-Agent Exposure Profile Detail Report

Jackson National Fish Hatchery

Fish Culture Operations

Process: *Anesthetize Fish*

Tricane is used to anesthetize fish in order to facilitate sorting, spawning, and fin clipping tasks.

Operating Conditions:

Work is conducted in covered and enclosed raceways.

Task: Anethetize Fish

Frequency: Weekly

Duration: 1 - 4 hours

Tricane is measured as approximately 1/2 cap full of Tricane powder. Tricane is placed in a tub 2.4 X 4 X 1.5 ft deep. The tub is then filled 1/2 full with water. Fish are netted from the raceway then placed in the solution for 2-3 minutes. For spawning tasks, fish are rinsed before squeezing. Waste solution is disposed of in the raceway which empties into the fish pond. Fin clipping occurs once per year and requires approximately 8 hours. Sorting/spawning occurs weekly from March through June.

Controls:

Recommendation

AGENT Tricane

OEL:

Exposure Estimate:

Health Effects Rating: 1 Reversible health effects of concern

Exposure Rating: 1 (<10% OEL; 95th %tile <0.1 OEL)

Exposure Category Acceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 1

Basis: Qualitative Judgement

FIG Priority: 1

Discussion: Tricane is an irritant. The primary routes of exposure are inhalation of dust and skin contact. Uncertainty is due to insufficient health effects data.

Medical Surveillance

Justifiable: no

Triggered or Critical Exposure no

Reference:

Process: *De-Gassing Water*

Well water and spring water is high in radon requireing the water to be de-gassed. In the old building, plastic media filled columns at the head of each raceway were used to aerate the water and vent gas. Still with this system in place, mean concentrations in the tank room are recoreded as 38 piCu/L with windows closed and < 9 piC/L with windows open. The new building under construction will be equipped with a water treatment tower that will allow degassing prior to water entering facility in addition to passing through mechanically exhausted columns at head of raceways.

Operating Conditions:

Task: General Operations in Tank Room.

Frequency: Daily

Duration: 4 - 8 hours

General operations in the Tank Room.

Controls:

The old tank room building has been condemed and activity in that building has been limited. The new building under construction will be equipped with a water treatment tower that will allow degassing prior to water entering facility in addition to passing through mechanically exhausted columns at head of raceways.

Recommendation

Validate effectiveness of radon control measures in the new building through sampling.

AGENT Radon

OEL: 4 pCu/L

Exposure Estimate: pCu/L

Health Effects Rating: 4 Life threatening or disabling injury or illness

Exposure Rating: 1 (<10% OEL; 95th %tile <0.1 OEL)

Exposure Category: Acceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 4

Basis: Engineering Controls in Place

FIG Priority: 4

Discussion: The new building under construction will be equipped with a water treatment tower that will allow degassing prior to water entering facility in addition to passing through mechanically exhausted columns at head of raceways. Based on engineering controls to be implemented, exposure is not expected to exceed the threshold.

Medical Surveillance

Justifiable: no

Triggered or Critical Exposure: no

Reference:

Process: *Treat Fish and Eggs for Parasites and Disease*

Fish and eggs are treated with formalin solutions to prevent or eliminate disease or parasites.

Operating Conditions:

Work is conducted in covered and enclosed raceways.

Task: Treat Eggs with Formalin Solution

Frequency: Daily

Duration: <1/2 hour

Formalin solution is mixed in large graduated cylinder then transferred to dog waterers which are used to meter the solution in the water stream. Task is conducted daily from March through the beginning of August.

Controls:

Recommendation

AGENT Formadahyde

OEL: 0.1 ppm

Exposure Estimate: 0.2 ppm

Health Effects Rating: 3 Irreversible health effects of concern

Exposure Rating: 3 (50-100% OEL; 95th %tile 0.5-1.0 OEL)

Exposure Category Unacceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 9

Basis: Screening Measurement

FIG Priority: 9

Discussion: OELs are TLV-C (0.3 ppm), REL-C (0.1 ppm) and PEL-STEL (2 ppm) A single personal breathing zone air sample collected during this task demonstrated a formaldehyde concentration of 0.2 ppm. Also, studies conducted by NIOSH at FWS fisheries in NE US demonstrated exceedance of REL, TLV, and PEL-STEL during similar tasks and conditions. Highest concentrations were found during transfers of formalin from 55 gallon drums and varied with method and worker technique.

Medical Surveillance

Justifiable: yes

Triggered or Critical Exposure yes

Reference: 29 CFR 1910.1048

Task: Treat Fish for Parasites, Tanks, Standing

Frequency: Quarterly

Duration: <1/2 hour

Undiluted formalin is added to dog waterers. Two to three dog waterers are placed at the head of the tank. Water levels are reduced and and tanks are cleaned prior to treatment. A stand pipe is replaced so water continues to fill tank. In addition, a garden watering can is used to sprinkle formalin along the length of the raceway in one application. The container is half full (approximately 1 gal) and requires about one minute to dispense. All containers are filled from a 55 gal drum (37% formalin) then carried to the raceway. Heavier doses may be required due to existing parasite loads, when fish are "flashing". Usually one raceway is treated at at time. Task may occur 3-4 times each year. Dog waterers dispense in approimately 10 minutes. After dispensing is complete, workers return to readjust water flow.

Controls:

Recommendation

AGENT Formadahyde

OEL: 0.1 ppm

Exposure Estimate: ppm

Health Effects Rating: 3 Irreversible health effects of concern

Exposure Rating: 4 (>10% OEL; 95th %tile > OEL)

Exposure Category Unacceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 12

Basis: Available Literature

FIG Priority: 12

Discussion: OELs are REL-C 15 min (0.1 ppm), TLV-C (0.3 ppm), and PEL-STEL (0.75 ppm). Air sampling for formaldehyde conducted by NIOSH at FWS fisheries in NE US demonstrated exceedance of REL, TLV, and PEL-STEL during similar tasks and conditions. Highest concentrations were found during transfers of formalin from 55 gallon drums and varied with method and worker technique. Large quantities of formalin are used for raceway treatments.

Medical Surveillance

Justifiable: yes

Triggered or Critical Exposure yes

Reference: 29 CFR 1910.1048

Maintenance Operations

Process: *Bobcat Operation*

A Bobcat "skid loader" is operated with a variety of attachments such as a bucket loader, excavator, augar, trencher, forklift, and tiller.

Operating Conditions:

Task: Operate Bobcat

Frequency: Weekly

Duration: 4 - 8 hours

Bobcat "skid loader" is reportedly used infrequently and typically for short duration operations. Duration is highly variable based on task requirements and may range from <1/2 hour to a full shift.

Controls:

Equipment is fitted with an enclosed cab. Cab door cannot be used with the backhoe attachment. Back hoe attachment must be operated outside the vehicle. Cab is heated but not air conditioned. Ear muffs are used inconsistently.

Recommendation

AGENT Noise

OEL: 85 dBA

Exposure Estimate: 82 dBA

Health Effects Rating: 3 Irreversible health effects of concern

Exposure Rating: 3 (50-100% OEL; 95th %tile 0.5-1.0 OEL)

Exposure Category: Acceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 9

Basis: Qualitative Judgement

FIG Priority: 9

Discussion: Sound level measurement for similar equipment (Bobcat 5185), under static conditions, demonstrated sound levels of 80 dBA inside the cab with the door closed and 82 dBA with the door open. Uncertainty is based on equipment configuration, condition, and operation. However, at the recorded levels, this task is not expected to exceed the OEL even for full shift operation.

Medical Surveillance

Justifiable: no

Triggered or Critical Exposure: yes

Reference: 29 CFR 1010.95

Process: *Grounds Maintenance*

Mowers and string trimmers are used to maintain the grounds at the facility.

Operating Conditions:

Task: Operate Mower

Frequency: Weekly

Duration: 4 - 8 hours

A John Deer model 725 riding mower (rear steering) is used to mow grass on the facility. Work is conducted seasonally.

Controls:

Recommendation

AGENT Noise

OEL: 85 dBA

Exposure Estimate: dBA

Health Effects Rating: 3 Irreversible health effects of concern

Exposure Rating: 3 (50-100% OEL; 95th %tile 0.5-1.0 OEL)

Exposure Category: Uncertain

Uncertainty: 2 Highly Uncertain

Risk/Control Priority: 9

Basis: Qualitative Judgement

FIG Priority: 18

Discussion: Sound level and dosimetry data are not available for this task. Sound level measurements for similar equipment show sound levels ranging from below the 85 dBA to over 90 dBA.

Medical Surveillance

Justifiable: yes

Triggered or Critical Exposure: yes

Reference: 29 CFR 1010.95

AGENT Ultraviolet radiation

OEL:

Exposure Estimate:

Health Effects Rating: 3 Irreversible health effects of concern

Exposure Rating: 1 (<10% OEL; 95th %tile <0.1 OEL)

Exposure Category: Acceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 3

Basis: Qualitative Judgement

FIG Priority: 3

Discussion: Duration of exposure is 4-8 hours. Additional processes and tasks may contribute to exposure. Use of broad brimmed hats and sunscreen is reported. Uncertainty is due to individual use of personal protective measures.

Medical Surveillance

Justifiable: no

Triggered or Critical Exposure: no

Reference:

Task: Operate String Trimmer

Frequency: Bi-Monthly

Duration: 1 - 4 hours

A Sthil FS90 string trimmer is used to trim vegetation along boarders, fence lines, around buildings and structures.

Controls:

Recommendation

AGENT Noise

OEL: 85 dBA

Exposure Estimate: dBA

Health Effects Rating: 3 Irreversible health effects of concern

Exposure Rating: 4 (>10% OEL; 95th %tile > OEL)

Exposure Category: Unacceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 12

Basis: Qualitative Judgement

FIG Priority: 12

Discussion: Sound level or dosimetry data were not available for this equipment and task. However, this type and model of equipment typically produces sound levels at the operator's ear of above 90 dBA and commonly near 100 dBA. At 90 dBA, the maximum allowable dose will be achieved in 2.5 hours and in as little as 15 minutes at 100 dBA. At these noise levels and for task duration of 1-4 hours the OEL is expected to be exceeded.

Medical Surveillance

Justifiable: yes

Triggered or Critical Exposure: yes

Reference: 29 CFR 1010.95

Process: *Repair and Fabrication of Metal Hatchery Equipment*

Repair and fabrication of hatchery equipment and plant furnishings, such as fabrication of feeder stands, in steel and the repair of hatchery equipment, parts and structures in aluminum or stainless steel.

Operating Conditions:

Work may be conducted at various locations, but is typically conducted in the shop facility.

Task: Cut Metal with Oxy-Acetylene Torch

Frequency: Monthly

Duration: 1/2 - 1 hour

Cut or heat metal of all types except galvanized, using oxy-acetylene torch.

Controls:

Recommendation

AGENT Welding fume, NOS

OEL: 5 mg/m3

Exposure Estimate: mg/m3

Health Effects Rating: 2 Severe, reversible health effects of concern

Exposure Rating: 1 (<10% OEL; 95th %tile <0.1 OEL)

Exposure Category Acceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 2

Basis: Qualitative Judgement

FIG Priority: 2

Discussion: A limited munber of cuts of short duration are made. Other tasks required for this process will contribute to agent exposure. Uncertainty is due to other agents generated when cutting aluminum or stainless steel.

Medical Surveillance

Justifiable: no

Triggered or Critical Exposure no

Reference:

Task: Cut Metal with Plasma Cutter

Frequency: Bi-Monthly

Duration: <1/2 hour

Cut metal parts of all metals, except galvanized, with plasma cutter.

Controls:

Recommendation

AGENT Welding fume, NOS

OEL: 5 mg/m3

Exposure Estimate: mg/m3

Health Effects Rating: 2 Severe, reversible health effects of concern

Exposure Rating: 1 (<10% OEL; 95th %tile <0.1 OEL)

Exposure Category Acceptable

Uncertainty: 0 Certain

Risk/Control Priority: 2

Basis: Qualitative Judgement

FIG Priority: 0

Discussion: Limited number of cuts of short duration are made. Other task required for this process may contribute to agent exposure.

Medical Surveillance

Justifiable: no

Triggered or Critical Exposure no

Reference:

Task: Operate Dry Cut Off Saw

Frequency: 2 - 3 days/wk

Duration: <1/2 hour

Cut aluminum, stainless steel and mild steel using a Milwaukee brand Catalogue No. 6190-20, 14 in carbide tipped blade cut off saw. Tool creates high torque at slow speed. No sparks are created during cutting.

Controls:

Recommendation

AGENT Noise

OEL: 85 dBA

Exposure Estimate: 90 dBA

Health Effects Rating: 3 Irreversible health effects of concern

Exposure Rating: 4 (>10% OEL; 95th %tile > OEL)

Exposure Category: Unacceptable

Uncertainty: 0 Certain

Risk/Control Priority: 12

Basis: Mathematical Modeling

FIG Priority: 0

Discussion: Sound level measurement of a Milwaukee Heavy Duty, Chop Saw, Cat#6190-20, with 14"carbide blade, cutting 2X2 square tubing at another facility demonstrated 100 and 102 dBA at the operator's ear. At 102 dBA the maximum allowable threshold will be reached in as little as nine minutes.

Medical Surveillance

Justifiable: yes

Triggered or Critical Exposure: yes

Reference: 29 CFR 1010.95

Task: Remove Galvanizing from Metal

Frequency: Bi-Annually

Duration: <1/2 hour

Remove galvanizing from metal parts using angle grinder prior to welding.

Controls:

Recommendation

AGENT Noise

OEL: 85 dBA

Exposure Estimate: dBA

Health Effects Rating: 3 Irreversible health effects of concern

Exposure Rating: 4 (>10% OEL; 95th %tile > OEL)

Exposure Category: Uncertain

Uncertainty: 1 Uncertain

Risk/Control Priority: 12

Basis: Qualitative Judgement

FIG Priority: 12

Discussion: Sound level and dosimetry data are not available for this task. Grinding tasks using similar tools in similar circumstances are capable of creating hazardous noise at levels 10 or more dB higher than the OEL. Duration of this task is short making knowledge of sound intensity necessary for making an exposure estimate.

Medical Surveillance

Justifiable: yes

Triggered or Critical Exposure: yes

Reference: 29 CFR 1010.95

AGENT Zinc (Zn)

OEL: 10 mg/m3

Exposure Estimate: mg/m3

Health Effects Rating: 2 Severe, reversible health effects of concern

Exposure Rating: 1 (<10% OEL; 95th %tile <0.1 OEL)

Exposure Category Acceptable

Uncertainty: 0 Certain

Risk/Control Priority: 2

Basis: Qualitative Judgement

FIG Priority: 0

Discussion: OEL is TLV-STEL. OEL is not expected to be exceeded during limited, short duration task.

Medical Surveillance

Justifiable: no

Triggered or Critical Exposure: no

Reference:

Task: Weld Aluminum

Frequency: 2 - 3 days/wk

Duration: <1/2 hour

Aluminum is welded using TIG process and Gulf Wire S-201 wire.

Controls:

Work may be conducted at various locations, but is typically conducted in the shop facility.

Recommendation

AGENT Aluminum

OEL: 1 mg/m3

Exposure Estimate: 1.4 mg/m3

Health Effects Rating: 2 Severe, reversible health effects of concern

Exposure Rating: 1 (<10% OEL; 95th %tile <0.1 OEL)

Exposure Category Acceptable

Uncertainty: 2 Highly Uncertain

Risk/Control Priority: 2

Basis: Available Literature

FIG Priority: 4

Discussion: Literature reports median aluminum exposure of studied welders in industrial settings as 1.4 mg/m3. In contrast with heavy industrial settings, projects conducted at this facility are expected to be smaller, generally of shorter duration with the workers conducuting numerous tasks such as layout and cutting in addition to welding.

Medical Surveillance

Justifiable: no

Triggered or Critical Exposure: no

Reference:

Task: Weld Stainless Steel

Frequency: 2 - 3 days/wk

Duration: <1/2 hour

Weld stainless steel using TIG (argon shielding gas) using a Hobart TIGMate and Bohler Thyssen Welding stainless steel ER308L or Gulf 401 stainless steel wire.

Controls:

Recommendation

AGENT Chromium VI, Inorganic, Insoluble

OEL: 1 ug/m3

Exposure Estimate: ug/m3

Health Effects Rating: 4 Life threatening or disabling injury or illness

Exposure Rating: 1 (<10% OEL; 95th %tile <0.1 OEL)

Exposure Category Acceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 4

Basis: Qualitative Judgement

FIG Priority: 4

Discussion: OEL is REL. OEL is not expected to be exceeded based on duration of task.

Medical Surveillance

Justifiable: no

Triggered or Critical Exposure no

Reference:

AGENT Nickel, Elemental

OEL: 1 mg/m3

Exposure Estimate: mg/m3

Health Effects Rating: 3 Irreversible health effects of concern

Exposure Rating: 1 (<10% OEL; 95th %tile <0.1 OEL)

Exposure Category Acceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 3

Basis: Qualitative Judgement

FIG Priority: 3

Discussion: OEL is PEL. OEL is not expected to be exceeded based on duration of task.

Medical Surveillance

Justifiable: no

Triggered or Critical Exposure no

Reference:

Task: Welding Steel

Frequency: Annually

Weld steel using SMAW and MIG processes with 308-1 or 601 or 6013 rod.

Duration: 1/2 - 1 hour

Controls:

Recommendation

AGENT Welding fume, NOS

OEL: mg/m3

Exposure Estimate: mg/m3

Health Effects Rating: 2 Severe, reversible health effects of concern

Exposure Rating: 1 (<10% OEL; 95th %tile <0.1 OEL)

Exposure Category Acceptable

Uncertainty: 0 Certain

Risk/Control Priority: 2

Basis: Qualitative Judgement

FIG Priority: 0

Discussion: OEL is TLV-TWA. A limited number of welds are made over a short duration. OEL is not expected to be exceeded for this task.

Medical Surveillance

Justifiable: no

Triggered or Critical Exposure no

Reference:

Process: *Rodent Management*

Rodents, primarily field mice are controlled using sticky traps and snap traps. Rodent nests are removed and rodent soiled surfaces are cleaned.

Operating Conditions:

Task: Remove Rodent Nests and Clean Soiled Areas

Frequency: Quarterly

Duration: <1/2 hour

Remove rodent nests and clean areas soiled with rodent urine and feces. Task requires using a broom and dust pan.

Controls:

Recommendation

AGENT Hantavirus

OEL:

Exposure Estimate:

Health Effects Rating: 4 Life threatening or disabling injury or illness

Exposure Rating: 4 (>10% OEL; 95th %tile > OEL)

Exposure Category Unacceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 16

Basis: Qualitative Judgement

FIG Priority: 16

Discussion: CDC reports 12 of 545 cases in 2009 were due to exposures occurring in the State of Wyoming. No procedures are in place for disinfection or handling of rodents or cleaning areas contaminated with rodent feces or urine. Dry methods are used for cleaning.

Medical Surveillance

Justifiable: yes

Triggered or Critical Exposure no

Reference:

Task: Trap Rodents

Frequency: Bi-Monthly

Duration: Incidental

Rodents, primarily field mice, are trapped using sticky traps and snap traps. Traps are set based on rodent activity. Tapped rodents are removed and disposed of on the range or in the trash.

Controls:

Enclosed traps are used.

Recommendation

AGENT Hantavirus

OEL:

Exposure Estimate:

Health Effects Rating: 4 Life threatening or disabling injury or illness

Exposure Rating: 1 (<10% OEL; 95th %tile <0.1 OEL)

Exposure Category Acceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 4

Basis: Qualitative Judgement

FIG Priority: 4

Discussion: CDC reports 12 of 545 cases in 2009 were due to exposures occurring in the State of Wyoming. Enclosed traps are used so direct that contact is limited or negligible. No procedures are in place for disinfection or handling of rodents or cleaning areas contaminated with rodent feces or urine.

Medical Surveillance

Justifiable: no

Triggered or Critical Exposure no

Reference:

Process: *Snow Removal*

Task requires operation of an Oskosh 82D74 truck with an attached rotary blower. This equipment is used to remove build up of snow deposited at the side of the roadway by pickup mounted snow plows.

Operating Conditions:

Task: Operate Rotary Snow Blower

Frequency: Monthly

Duration: 1/2 - 1 hour

Task requires operation of an Oskosh 82D74 truck with an attached rotary blower. The blower has two additional engines, the drive engine and the rotary which is a V Detroit without a muffler. This equipment is used to remove build up of snow deposited at the side of the roadway by pickup mounted snow plows. Noise hazard increases when windows are down for ventilation.

Controls:

Enclosed truck cab

Recommendation

AGENT Noise

OEL: 85 dBA

Exposure Estimate: 0 dBA

Health Effects Rating: 3 Irreversible health effects of concern

Exposure Rating: 2 (10-50% OEL; 95th %tile 0.1-0.5 OEL)

Exposure Category Uncertain

Uncertainty: 1 Uncertain

Risk/Control Priority: 6

Basis: Qualitative Judgement

FIG Priority: 6

Discussion: Sound level or dosimetry data are not available for this operation. The rotary plow is expected to produce high level hazardous noise. Attenuation by the truck cab will reduce operator exposure. Less attenuation is expected with cab windows open. Duration was reported as no more than one hour per shift.

Medical Surveillance

Justifiable: yes

Triggered or Critical Exposure yes

Reference: 29 CFR 1010.95

Process: *Water System Disinfection*

The drinking water system is disinfected infrequently on the occasion of positive fecal coliform test results.

Operating Conditions:

Task: Disinfect Water System

Frequency: Single Event

Duration: <1/2 hour

The lid to a 1500 gallon underground tank is accessed 3 feet below a manhole cover. Six percent sodium hypochlorite bleach solution is added directly into the tank. Eight to ten 1.42 gallon containers are added, then the tank is filled to mix. Super-chlorinated water is moved through the system, allowed an overnight contact time, and then the tank and system are drained and flushed.

Controls:

Recommendation

AGENT Sodium Hypochlorite

OEL: 2 mg/m3

Exposure Estimate: mg/m3

Health Effects Rating: 2 Severe, reversible health effects of concern

Exposure Rating: 1 (<10% OEL; 95th %tile <0.1 OEL)

Exposure Category: Acceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 2

Basis: Qualitative Judgement

FIG Priority: 2

Discussion: OEL is WEEL-C. Other applicable OEL is NIOSH-C for Chlorine of 0.5 ppm. Primary hazard is eye and skin contact as a result of splash. Uncertainty is due to the work being conducted in the confined or enclosed space of the tank access, which may increase agent concentration, and no barrier protections reported.

Medical Surveillance

Justifiable: no

Triggered or Critical Exposure: no

Reference:

Process: *Wood Deck Waterproofing*

Decks at the facility and family housing are treated with Superdeck transparent stain. Decks are treated every two years.

Operating Conditions:

Task: Apply Deck Sealant

Frequency:

Duration: 4 - 8 hours

Product is transferred from 5 gallon containers into a 2 gallon manual pump sprayer, applied using the sprayer, and then rolled. Task requires 5-7 days to complete.

Controls:

Recommendation

AGENT Stoddard solvent

OEL: 100 ppm

Exposure Estimate: ppm

Health Effects Rating: 1 Reversible health effects of concern

Exposure Rating: 2 (10-50% OEL; 95th %tile 0.1-0.5 OEL)

Exposure Category: Uncertain

Uncertainty: 1 Uncertain

Risk/Control Priority: 2

Basis: Qualitative Judgement

FIG Priority: 2

Discussion: Product is a proprietary mineral spirits and vegetable oil blend containing up to 33% mineral spirits. Manufacturer cites TLV of 100 ppm as the OEL. Spray and roll application of large quantities over a period of 4-8 hours could result in exposure to concentrations approaching or exceeding OEL concentration. However, work is conducted outdoors and agent is expected to have low vapor pressure.

Medical Surveillance

Justifiable: yes

Triggered or Critical Exposure: no

Reference:

Process: *Woodworking and Carpentry*

A variety of power tools are used to cut and shape woods. These include planer, jointer, band saw, table saw, portable belt sander, compound mitre saw, skill saw, hand drill, drill press, and router. Woods worked include oak, redwood, pine, and cedar.

Operating Conditions:

Work is conducted within the maintenance shop or at work locations throughout the facility (using hand tools).

Task: Operate Power Woodworking and Carpentry Tools

Frequency: Weekly

Duration: 4 - 8 hours

Use a variety of shop and portable power tools to cut and shape oak, cedar, pine, and redwood. Duration and frequency varies with the project. Projects typically occupy about 5 days per month and may require more than 4 hours per shift.

Controls:

Some shop tools are connected to a dust collection system.

Recommendation

AGENT Noise

OEL: 85 dBA

Exposure Estimate: dBA

Health Effects Rating: 3 Irreversible health effects of concern

Exposure Rating: 4 (>10% OEL; 95th %tile > OEL)

Exposure Category: Unacceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 12

Basis: Qualitative Judgement

FIG Priority: 12

Discussion: Sound level data was not available for this task. Existing data for similar woodworking tools shows a number of highly noise hazardous tools. Base on the reported duration of power tool use, OEL is expected to be exceeded.

Medical Surveillance

Justifiable: yes

Triggered or Critical Exposure: yes

Reference: 29 CFR 1010.95

AGENT Wood dust, all other species

OEL: 1 mg/m3

Exposure Estimate: mg/m3

Health Effects Rating: 1 Reversible health effects of concern

Exposure Rating: 1 (<10% OEL; 95th %tile <0.1 OEL)

Exposure Category: Acceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 1

Basis: Qualitative Judgement

FIG Priority: 1

Discussion: OEL is TLV. Based on duration and frequency, OEL is not expected to be exceeded during this task.

Medical Surveillance

Justifiable: no

Triggered or Critical Exposure: no

Reference:

AGENT Wood dust, oak, beech

OEL: 1 mg/m3

Exposure Estimate: mg/m3

Health Effects Rating: 4 Life threatening or disabling injury or illness

Exposure Rating: 1 (<10% OEL; 95th %tile <0.1 OEL)

Exposure Category: Acceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 4

Basis: Qualitative Judgement

FIG Priority: 4

Discussion: OEL is TLV Inhalable Fraction. Based on limited use of oak, the OEL is not expected to be exceeded. Oak dust is a known human carcinogen, therefore keeping exposure as low as possible is prudent.

Medical Surveillance

Justifiable: no

Triggered or Critical Exposure: no

Reference:

AGENT Wood dust, Western Red Cedar

OEL: 0.5 mg/m3

Exposure Estimate: mg/m3

Health Effects Rating: 1 Reversible health effects of concern

Exposure Rating: 1 (<10% OEL; 95th %tile <0.1 OEL)

Exposure Category Acceptable

Uncertainty: 1 Uncertain

Risk/Control Priority: 1

Basis: Qualitative Judgement

FIG Priority: 1

Discussion: OEL is TLV Inhalable fraction due sensitization reactions. Based on limited use of cedar and redwood, OEL is not expected to be exceeded.

Medical Surveillance

Justifiable: no

Triggered or Critical Exposure no

Reference:

Health Risk and Further Information Gathering Priorities

Jackson National Fish Hatchery

Division, Shop, Project	Process	Task	Agent	Exposure Catagory	Justified Medical Surveillance	Triggered Surveillance	Health Risk Priority	FIG Priority
Maintenance Operations	Rodent Management	Remove Rodent Nests and Clean Soiled Areas	Hantavirus	Unacceptable	yes	no	16	16
Maintenance Operations	Grounds Maintenance	Operate String Trimmer	Noise	Unacceptable	yes	yes	12	12
Fish Culture Operations	Treat Fish and Eggs for Parasites and Disease	Treat Fish for Parasites, Tanks, Standing	Formadahyde	Unacceptable	yes	yes	12	12
Maintenance Operations	Woodworking and Carpentry	Operate Power Woodworking and Carpentry Tools	Noise	Unacceptable	yes	yes	12	12
Maintenance Operations	Repair and Fabrication of Metal Hatchery Equipment	Remove Galvanizing from Metal	Noise	Uncertain	yes	yes	12	12
Maintenance Operations	Repair and Fabrication of Metal Hatchery Equipment	Operate Dry Cut Off Saw	Noise	Unacceptable	yes	yes	12	0
Maintenance Operations	Grounds Maintenance	Operate Mower	Noise	Uncertain	yes	yes	9	18
Maintenance Operations	Bobcat Operation	Operate Bobcat	Noise	Acceptable	no	yes	9	9
Fish Culture Operations	Treat Fish and Eggs for Parasites and Disease	Treat Eggs with Formalin Solution	Formadahyde	Unacceptable	yes	yes	9	9
Maintenance Operations	Snow Removal	Operate Rotary Snow Blower	Noise	Uncertain	yes	yes	6	6
Maintenance Operations	Rodent Management	Trap Rodents	Hantavirus	Acceptable	no	no	4	4
Maintenance Operations	Woodworking and Carpentry	Operate Power Woodworking and Carpentry Tools	Wood dust, oak, beech	Acceptable	no	no	4	4
Fish Culture Operations	De-Gassing Water	General Operations in Tank Room.	Radon	Acceptable	no	no	4	4
Maintenance Operations	Repair and Fabrication of Metal Hatchery Equipment	Weld Stainless Steel	Chromium VI, Inorganic, Insoluble	Acceptable	no	no	4	4
Maintenance Operations	Grounds Maintenance	Operate Mower	Ultraviolet radiation	Acceptable	no	no	3	3
Maintenance Operations	Repair and Fabrication of Metal Hatchery Equipment	Weld Stainless Steel	Nickel, Elemental	Acceptable	no	no	3	3
Maintenance Operations	Repair and Fabrication of Metal Hatchery Equipment	Weld Aluminum	Aluminum	Acceptable	no	no	2	4
Maintenance Operations	Wood Deck Waterproofing	Apply Deck Sealant	Stoddard solvent	Uncertain	yes	no	2	2
Maintenance Operations	Repair and Fabrication of Metal Hatchery Equipment	Cut Metal with Oxy-Acetylene Torch	Welding fume, NOS	Acceptable	no	no	2	2
Maintenance Operations	Water System Disinfection	Disinfect Water System	Sodium Hypochlorite	Acceptable	no	no	2	2
Maintenance Operations	Repair and Fabrication of Metal Hatchery Equipment	Welding Steel	Welding fume, NOS	Acceptable	no	no	2	0

Division, Shop, Project	Process	Task	Agent	Exposure Catagory	Justified Medical Surveillance	Triggered Surveillance	Health Risk Priority	FIG Priority
Maintenance Operations	Repair and Fabrication of Metal Hatchery Equipment	Cut Metal with Plasma Cutter	Welding fume, NOS	Acceptable	no	no	2	0
Maintenance Operations	Repair and Fabrication of Metal Hatchery Equipment	Remove Galvanizing from Metal	Zinc (Zn)	Acceptable	no	no	2	0
Maintenance Operations	Woodworking and Carpentry	Operate Power Woodworking and Carpentry Tools	Wood dust, Western Red Cedar	Acceptable	no	no	1	1
Fish Culture Operations	Anesthetize Fish	Anethetize Fish	Tricane	Acceptable	no	no	1	1
Maintenance Operations	Woodworking and Carpentry	Operate Power Woodworking and Carpentry Tools	Wood dust, all other species	Acceptable	no	no	1	1