Draft

ORNL WORK PLAN

Operations, Maintenance and Services

Work Plan Name / Rev: DEERSURVEILLANCE18 / 13

28058

WORK SCOPE/DESCRIPTION	
Requester (Name/Badge/Division):	Dailey, Rick L / 00027505 / X035
Location of work (Bldg/Rm/Other):	/ /
Work Plan Title:	EPSD'S Support Role for the CY2018 Deer Hunts

Description of Service/Work Needed:
In a joint effort between TWRA and ORNL, an annual hunt is held to harvest and reduce the deer population on the Oak Ridge Reservation. It is the role of EPSD to provide support by collecting bone and tissue samples from harvested deer by using knives, and lopping shears. These samples are analyzed immediately onsite by CSD. The results determine whether the deer is released to the hunter or retained. EPSD will properly package the retained deer for future disposal. If a deer is retained due to radiological reasons EPSD personnel will (using knives, reciprocating saw,or hacksaw) cut the deer up into no more than 35lb sections, package each 35lbs into a cardboard box (10x12x14) secure it by double bagging and adding absorbent material (Quik Solid) to the box, taping it ,and labeling the box with date, deer ID, box weight, and biohazard label. Each box will then be placed into a secure freezer that is maintained and in the custody of CSD.

Charge Number, if required:	318500AB
Work Plan Grade/Worktype:	4 / 0
Author (Name/Badge):	Dailey, Rick L / 00027505

File Attachments:

Badge	Name	Attachment Desc	File Name
00027505	Dailey, Rick L	checking scale	deerscaleworkplan.pdf
00027505	Dailey, Rick L	QEA DEER LIFTING	QEA LIFT 2 MAN DEER LIFT.pdf
00027505	Dailey, Rick L	QEA Exposure	qeaexposure.pdf
00027505	Dailey, Rick L	QEA Exposure	QEA_DEERSURVEILLANCE18.pdf

INSTRUCTIONS

Prerequisites/Precautions:
EPSD- Prepare a tentative schedule for EPSD staff with the appropriate personnel to support hunts.
EPSD - Handling and sectioning of retained (potentially radiologically contaminated) deer shall be conducted by Ut-Battele/EPWSD personnel Note: EPSD is not responsible for disposal of any radiologically contaminated deer retained during screening.
EPSD- Verify that the following supplies are available; Boxes (10wx12dx14h), box liners, duct tape,work area laydown material, absorbant agent,(quick solid), appropriate cutting tools,appropriate gloves, cut resistant inner gloves with cut rating of 4 or higher, safety glasses.
EPSD- Scales-verify M&TE Calibration is current and working properly. Make note of the calibration ID# and calibration date in the comment section of the Pre/Post Job briefing form.

EPSD - Ensure that a qualitative exposure assessment (QEA) has been performed for the hazards that apply to each work activity (see attached QEAs for recurring tasks) OR that a quantitative exposure assessment (exposure monitoring) will be performed during the work event. Contact SSD to conduct a QEA if conditions of physical hazards are anticipated to exceed conditions in attached QEAs. QEAs developed after approval of this work plan shall be maintained with the documentation for the work activity.

Directions:
Only UT-Battelle employees perform any sampling on harvested deer.
EPSD-Setup the scales in an appropriate location, ensuring calibration is current and a verification check is performed to ensure accuracy and maintain proper operation throughout the hunt.
EPSD- Support DOE,TWRA,CSD,and EPSD in the following activities . Gather information from the hunter, collecting data from the deer,preparing samples for CSD, and packaging retained deer for disposal. The process to collect deer samples are as follows.
EPSD will collect bone and tissue samples from harvested deer. Bone samples will be collected from hind leg using a knife and loppers. A bone section about 3 inches long is needed. About 75mg of tissue is also collected from the hind quarters of each deer with a knife. Bone samples are placed in lizard bags and tissue samples are placed in plastic vials. Weights are recorded and this information is recorded on the hunters permit. Samples are then relinquished to CSD for rad screening.

EPSD- Take down the scales and store in an appropriate location.

Post Work Testing:
Contact RCT for contamination survey of tools,equipment, and tables if a deer is retained and packaged by EPSD.

Closeout:
EPSD- Relinquish custody of samples or retained deer to CSD.

JOB HAZARD EVALUATION	
HAZARDS	PERMITS / CONTROLS
Radiological Work: (no actual radiological work is planned under this task)	ı Radiation survey instruments are available in the field to check deer,work surfaces and workers,as necessary. Radiological Control Technician will be contacted for support in any contamination areas, as necessary.: Radiological posting(Proper posting is required for the freezer and package the retained deer are stored in. Designated freezers will be posted and in an appropriate location to store the packages of retained deer. Each package will have a biohazard label on it applied by EPSD personnel. CSD is in custody of these packages until proper disposal steps are taken)
Electrical Equipment and Tools: If used, reciprocating saw may be electrically powered by cord and plug.	ı Listed by a nationally recognized testing laboratory (NRTL) ı GFCI rated extension cords
Ergonomic Conditions (Contact Stress, Vibration, Posture, Force, Repetitive Motion): Lifting of deer carcass	ı Exposure Assessment: Enter or attach justification to classify exposure scenario as low risk, qualitative exposure assessment (QEA), or requirement to conduct quantitative exposure monitoring (QEM): No repetative production-like lifting is required. Lifting is intermittent. No QEA is required. ı Diversify activities ı Stretch breaks/exercises ı Worker rotation
Heat/Cold Stress: dress in an appropriate manner for daily conditions for a 12; hour work day. Heaters and shelter are available	ı Exposure Assessment: Enter or attach justification to classify exposure scenario as low risk, qualitative exposure assessment (QEA), or requirement to conduct quantitative exposure monitoring (QEM): Work requirements - Level D PPE (OR occasionally Level D PPE plus tyvek), acclimated workers, light (continuous) to moderate work (intermittent) - considered low risk. Exposure assessment is dependent on ambient conditions and cannot be perfomred in advance. ı Work/rest regimen: Specify. Workers check ambient readings and wind chill factors periodically when in the field and self-pace work activities. Avoid contact of bare skin to cold surfaces. Contact SSD for assessment if air temp < 20 deg F and wind speed >10 mph ı Worker rotation ı Acclimatization ı Frequent breaks: rotate roles if necessary to keep from over exposure to cold/heat conditions
Manual Material Handling: be mindful of proper lifting technique in lifting deer and handling scales	ı Establish Controls (Guideline) [apply 30-50-30 criteria for a non-repetitive lifting task] ¡ Reduce weight ¡ Decrease load ¡ Design work area ¡ Facilitate access to material ¡ Optimum environment ¡ Reduce distance /Provide proper storage facilities ¡ Load storage ¡ Eliminate manual lifting/lowering ¡ Eliminate pushing/pulling – Use lifting aids ¡ Other instructions to staff

	: Always lift with your legs and keep back straight. Use help when needed - Diversity of activities: Workers alternate job tasks that require lifting - Team Lifting (Guideline): As required for awkward loads (e.g., deer carcass) and/or load of 40 lb or more. - Exposure Assessment: Enter or attach justification to classify exposure scenario as low risk, qualitative exposure assessment (QEA), or requirement to conduct quantitative exposure monitoring (QEM): See QEA for liting deer carcass. No repetitive or production-like two-handed lifting tasks are required for this work activity/task. No Qualitative Exposure Assessment is required. - Consider forklifts or powered industrial trucks: See Power Equipment hazard (formerly Lifting Aides): Use to assist deer positioning if size reduction is required.
Noise: reciprocating saw may be used intermittently to size reduce retained deer (infrequently required)	- Exposure Assessment: Enter or attach justification to classify exposure scenario as low risk, qualitative exposure assessment (QEA), or requirement to conduct quantitative exposure monitoring (QEM): Total day exposure to reciprocating saw is 30 min intermittent exposure over 12 hour day. See attached low risk QEA documentation. - Hearing protection (plugs or muffs): Selecting Hearing Protection: NRR of 27 or higher
Chemical/Rec ID 1: Quik Solid (B4170) is used as required for packaging retained deer after sectioning to absorb fluids in waste containers.	- Exposure Assessment: Enter or attach justification to classify exposure scenario as low risk, qualitative exposure assessment (QEA), or requirement to conduct quantitative exposure monitoring (QEM): Exposure assessment not required as no OELs apply based on product MSDS. - Gloves: Specify. Impermeable latex or nitrile gloves - Safety glasses
Infectious materials: Retained deer should be handled with care in regard to radiological control and potential biohazards.	- Exposure Assessment: Enter or attach justification to classify exposure scenario as low risk, qualitative exposure assessment (QEA), or requirement to conduct quantitative exposure monitoring (QEM): Written exposure assessment is not required; There is no OEL for biological materials. - PPE: Specify. Impermeable gloves, safety glasses required. See additional PPE for radiological controls when appropriate. - Package retained carcass and label as biohazard to indicate potential for bacterial growth or communicable disease. - Decon equipment and surfaces after use with antibacterial wipes and/or freshly prepared solution of 10% clorox. - Wash hands with wipes, hand sanitizer and/or soap and water prior to eating, drinking, use of tobacco products, applying lip balm, taking medication, etc.
Insects/animals/wildlife/parasites: deer hunt associated outdoor/wildlife hazards	- PPE: Specify. When working in areas where contact with ticks,chiggers,etc. is likely,wear repellant-treated long sleeved shirts and pants and treated hat - Insect spray: Apply DEET-based product to exposed skin and/or Promethrin-based product to clothing/shoes/boots/hat.Use products only as directed by manufacturer instructions - Self-checking: Check for ticks on clothing, skin and head

	immediately after leaving work location and prior to entering vehicle. Remove work clothing and shower as soon as possible. Repeat tick checking. Observe field locations for presence of stinging/biting insects such as bees,hornets and fire ants.Warn co-workers to avoid nest locations.
Flying deer parts: thre cutting of deer bone and packaging of retained deer creates the hazard of flying objects	l safety glasses will be utilized while working around the deer hunt operations l Consider use of faceshield, as needed in addition to safety glasses
Cutting tools: handling the deer and packaging of retained deer will require the use of cutting tools	l be cautious of the hazards associated with all the different cutting tools: wear latex gloves and cut resistant glove liners when taking bone samples,tissue samples, and disposing of retained deer.
Handling of retained deer: once deemed as a retained deer by CSD, restriction apply to those persons to whom can handle the retained deer.Only EP personnel are to handle retained deer until handed over to CSD for lockable storage.	l Radiological control aspect: Historical data has been reviewed and the task has been overseen by radiological protection operations,it is decided that only EPSD workers handle and package the retained deer and use appropriate technique and approach when packaging these deer.
Slip/Trip conditions and rough terrain	l Safety-toed footwear with adequate tread for conditions present.

DOCUMENTATION REVIEW AUTHORIZATION (Approvals are certification of hazards assessment)		
Reviewer/Approver Roles	Signature	Date
IS/IH	Thomas, Billey	
Other Subject Matter Experts (SMEs)	Beatty, Timothy W	
Other Subject Matter Experts (SMEs)	Carr, Mark Travis	
Other Subject Matter Experts (SMEs)	Guinn, Tyler	
Other Subject Matter Experts (SMEs)	Towe, Tyson	
Project Lead	Dailey, Rick L	
Radiation Protection	O'Dell, Roger	
Task Leader	Gregory, Scott	
Work Package Concurrence		
Facility Manager		
Operations Supervisor		
Facility Manager Approval To Start Work		
Facility Manager		
Work Start Authorization		
Task Leader		
Work Acknowledged Complete		
Task Leader		
Worker Feedback:		

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PRE-JOB SAFETY REVIEW GUIDE

ID: 28058

Scope of Work: Review work package/plan to ensure all participants understand the work activity.

Hazards: Review the hazards identified in Job Hazard Evaluation (JHE) / work plan (IOP).

- Since the work package / plan was written: 1) Have conditions changed? 2) Are there new hazards? Refer to Field Notes and Focus Areas.

Hazard Controls / Permits: Review:

- Written permits for the work activity.
- Precautions, step warnings, Hold Points ...
- Personal Protective Equipment (PPE)
- Work instructions for information - e.g., steps where hazards are introduced.
- ORNL subject area requirements - e.g., non-permit hazard controls.

Performing Work:

- Discuss group/individual responsibilities for safe & effective work.
- Follow work instructions & safety procedures.
- Availability/location of materials, tools, etc.
- Any previous experiences / lessons learned?
- Response if work cannot be performed as planned.
- What is the worst thing that could happen?
- Are there *Potential error traps* with the job? → →
- Take a minute before: work start & leaving work area.
- Work Hand-off / Turnover - workers & Task Leader

→ Potential Error Traps:

- Time pressures
- Distractive environment
- High workload
- First time evolution
- First day back
- Vague guidance
- Over confidence
- Imprecise communications
- Work stress

Abnormal Situation Response:

- *Stop Work*: Observe an unsafe act, activity or condition that creates an imminent danger.
- *Emergency Response*: Discuss egress paths or other responses if problems are encountered.

Field Notes and Focus Areas: (Use this area as a work space to record notes related to new hazards identified in the field or changed conditions. Record feedback in work package/plan information systems.)

By signing below, I am indicating that I have been briefed on the potential hazards associated with completing this job.

Signature / Badge	Date	Signature / Badge	Date

Check accuracy of the scale before use and every 20 measurements by following these steps:

1. Ensure the scale is level. The scale is a fixed scale and is not moved so it should be level.
2. Zero the scale- reading should show 0.0
3. Place check weight on center of scale to ensure readings fall within +/- 1.1 lbs (range of 23.1 lb-26.1 lb.) Examine check weight for damage or corrosion prior to use. Check weights should be handled using gloves.
4. Record check weight and the scale property number on a weight check list in the work plan packet.
5. If balance is not within specified range,clean,level and reset scale to zero as needed. Perform check measurement again.Record any additional checks.
6. If checks continue to be out of specified range of +/- 1.1 lb and device cannot be adjusted to meet required accuracy notify ORNL Metrology for calibration and/or maintenance. Remove the scale from service immediately if feasible.
7. Return check weights to storage box.Store weight in original protective case in a dry location when not in use. Note: At least once every 3 years send check weights to ORNL metrology lab to ensure consistency.

LiftRight℠

Two Man deer lift

Data Entered

	Origin	Destination
Horizontal Location (in.)	6.00	6.00
Vertical Location (in.)	12.00	36.00
Angle of Asymmetry (deg)	0.00	0.00
Frequency (lifts per minute)	0.02	
Duration	< 1 hour	
Coupling	good	
Weight of Object (lbs.)	50	

Multipliers

	Origin	Destination
Horizontal	1.00	1.00
Vertical	0.86	0.96
Rotation	1.00	1.00
Distance	0.90	
Frequency	1.00	
Coupling	1.00	

	Origin	Destination
Recommended Weight Limit (RWL)	39.48	43.59
Lift Index (LI)	1.27	1.15

Notes

Two person lift to move deer carcass with weights up to 100 lb.
Lift exceeds RWL but can be performed safely with additional administrative controls. additional workers are available to assist lifting and workers rotate lifting tasks.

Single Hazard Qualitative Exposure Assessment Form

Project Information

☐ No QEA is required based upon a review of the type(s) of hazard(s) associated with the activity/task

☐ QEA could not be conducted at the time the RSS/Work Plan was reviewed/approved due to inadequate information on the agent(s)/hazards provided by the PI, Work Planner/Package author. Discuss controls incorporated into *Work Control* to assure EA is conducted in the future: _____

Process/Job/Task: (SEG/SET Name)	Operate electrically powered hand held saw when required during annual deer hunt (typically 3 times a year).
Work Description:	Operate electrically powered hand held saw when required during annual deer hunt (typically 3 times a year). Saws are used to obtain samples for rad screening of harvested deer or to size reduce retained rad contaminated deer. Noise exposure is periodic during the work day.

Facility #: TWRA Checking Station		**Room/Lab/Shop #:**	Open-air shed
Organization:	EPSD	**RSS/Work Plan #:**	DEERSURVEILLANCE17

Hazard Information

Agent/Hazard (for chemical products, list multiple components)	**Quantity**	***OEL**	**Unit**	**Percent** (if applicable)
Noise exposure for operator of reciprocating saw (30 min/day)	102 max	85	dbA	

* Optional field

Source of OEL: ☒ ACGIH ☐ OSHA ☐ DOE ☐ NIOSH ☐ None ☐ Other:

CHEMICAL HAZARD

Chemical Product Name:

Potential Routes of Entry

☐ Inhalation ☐ Penetration ☐ Ingestion ☐ Splash ☐ Absorption ☐ Other

Primary Exposure Forms

☐ Solid ☐ Liquid ☐ Gas ☐ Fume ☐ Particulate ☐ Vapor ☐ Mist ☐ Nano ☐ Other

Frequency of Exposure

☐ One Time ☐ Daily ☐ Weekly ☐ Monthly ☐ Quarterly ☐ Annually ☒ Variable

Duration of Exposure (per exposure event)

☐ <1/2 hour ☐ 1/2 - 2 hours ☐ 2 - 6 hours ☐ 6 - 8 hours ☐ > 8 hours ☐ Variable

PHYSICAL HAZARD

Type of Hazard

Thermal Stress: ☐ Heat ☐ Cold

☐ Ergonomic (Specify):

Acoustic: ☐ Infrasound and low-frequency sound ☒ Noise ☐ Ultrasound

☐ Electromagnetic Radiation & Fields (Specify):

Frequency of Exposure

☐ One Time ☐ Daily ☐ Weekly ☐ Monthly ☒ Quarterly ☐ Annually ☐ Variable

Duration of Exposure (per exposure event)

☐ <1/2 hour ☒ 1/2 - 2 hours ☐ 2 - 6 hours ☐ 6 - 8 hours ☐ > 8 hours ☐ Variable

Single Hazard Qualitative Exposure Assessment Form

Control Strategy

☐ No controls in-place or specified in RSS or Work Plan/Package

☐ [1]Engineering:

☒ [2]Administrative: Worker rotation, intermittant use with total time less than 30 min per day.

1. Engineering Control codes: GB – Glovebox, GV – General Ventilation, Hood – Other LEV Hood, I/E – Isolate or Enclose hazard, LH - Lab Hood S – Shielding, W – Wet Methods; **2. Administrative Control Codes:** T –Training, L/P – Labeling or Postings, P – Written Procedure/Plan; LT – Limited Stay Time, W/R – Modified Work/Rest Cycle, BEI – Biological Monitoring, MS – Medical Surveillance

Controls Effective:

☒ Yes ☐ No ☐ Uncertain Comments:

Exposure Assessment Rating

(Health Severity Rating (1-4)	+	Exposure Rating) Rating (1-4)	x	Certainty Rating (1-3)	=	QEA Rating (2-24)
4		**2**		**1**		6

Exposure Decision

☒ **Acceptable (2-7)** document and schedule follow-up assessment	☐ **Uncertain (8-15)** prioritize for further information gathering	☐ **Unacceptable (16-24)** Implement control measures and prioritize for Follow-up assessment

Was hazard considered Low Risk (Acceptable)?

☐ **No**, proceed with Follow-up section ☒ **Yes**, describe justification for classification as acceptable or "Low Risk"

Acceptable Exposure Justification: HPD provides adequate reduction. Exposure is non-continuous and of short duration and equipment is not in operation continuously for >10 min.

Follow-up

Follow-up Assessment Priority: Schedule: ☐ Month ☐ 6 months ☒ 1 year ☐ 3 years ☐ Other:

Is Quantitative Exposure Monitoring recommended? ☐ Yes ☒ No

Recommendations/Comments:

Qualified H&S Professional: Billey Thomas, CSP Date: 09/29/2017

QEA Rating Tables

Table 1: Health Severity Rating

Rating		Criteria
HSR		Effects from Over Exposure
1	Negligible	Negligible or reversible effects of little concern
2	Minor	Minor or reversible health concern Note: This applies to chemical agents classified as a *Slight Health Hazard. Examples for using this rating for physical agents include: heat fatigue, discomfort from repetitive stress tasks, minor skin burn not requiring medical treatment, etc.
3	Medium	Medium to severe, reversible health concern. Note: This applies to chemical agents classified as a *Moderate Health Hazard. Examples for using this rating for physical agents includes temporary threshold shift in hearing, heat exhaustion, reversible repetitive stress disorders requiring medical intervention, temporary or transient sight impairment, minor skin burns (UV or IR) requiring medical treatment, etc.
4	Major	Major or irreversible health concern. Includes unknown health effects Note: This applies to chemical agents classified as a *High Health Hazard or *Extreme Health Hazard. Examples for using this rating for physical agents include: standard threshold shift in hearing, heat stroke, permanent peripheral nerve or tendon damage, ruptured disc, permanent (total or partial) loss of sight, formation of cataracts, neurological effects, sterility, etc.

**See the Hodge and Sterner toxicity classification scale

Table 2: Exposure Rating**

Rating		Criteria
1	Negligible/Remote	• Little to no exceedance of 10% of the OEL (i.e., 95th percentile exposure estimate is virtually always less than 10% of the OEL) • No signs or symptoms of exposure • There is sufficient quantitative exposure data to judge exposure • Very little skin contact with Agent is expected • Engineering and administrative controls are in place and functioning • Only diluted chemicals are used in the process • Very low intensity of energy source • Short exposure duration • The phase of the chemical does not allow for routine exposure
2	Low/Occasional	• Exposure >5% exceedance of 10% of the OEL (i.e., 95th percentile exposure estimate lies between 10% of the OEL and 50% of the OEL) • No specific signs or symptoms of exposure • Qualitative monitoring indicates insignificant levels of hazard • Only incidental skin contact with Agent • There is exposure potential • Engineering and administrative controls are available but effectiveness is questionable
3	Medium/Probable	• Exposure >5% exceedance of 50% of the OEL (i.e., 95th percentile exposure estimate lies between 50% the OEL and the OEL) • Air concentrations may exceed established action levels • Routine skin contact with chemical is expected
4	High/Likely	• Exposure >5% exceedance of the OEL (i.e., 95th percentile exposure estimate > OEL) • Signs and symptoms are evident • High generation of airborne particles or vapors

** Use of personal protective equipment (including respirators) shall not be taken into account when determining the exposure rating.

Table 3: Certainty Rating

Rating		Criteria
1	Certain	The environmental agent's exposure profile and/or health effects are well-understood. The industrial hygienist has high confidence in the acceptability judgment.
2	Uncertain	There is enough information to make a judgment, but further information gathering is warranted to verify the exposure assessment.
3	Highly Uncertain	The acceptability judgment was made in the absence of significant information on the exposure profile and/or health effects.

QEA Rating = (Health Severity Rating + Exposure Rating) X Certainty Rating

Single Hazard Qualitative Exposure Assessment Form

Project Information

☐ No QEA is required based upon a review of the type(s) of hazard(s) associated with the activity/task

☐ QEA could not be conducted at the time the RSS/Work Plan was reviewed/approved due to inadequate information on the agent(s)/hazards provided by the PI, Work Planner/Package author. Discuss controls incorporated into *Work Control* to assure EA is conducted in the future: _____

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Organization:	EPSD	**RSS/Work Plan #:**	DEERSURVEILLANCE18

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Agent/Hazard (for chemical products, list multiple components)	**Quantity**	***OEL**	**Unit**	**Percent** (if applicable)
Noise exposure for operator of reciprocating saw (30 min/day)	102 max	85	dbA	

* Optional field

Source of OEL: ☒ ACGIH ☐ OSHA ☐ DOE ☐ NIOSH ☐ None ☐ Other:

CHEMICAL HAZARD

Chemical Product Name:

Potential Routes of Entry

☐ Inhalation ☐ Penetration ☐ Ingestion ☐ Splash ☐ Absorption ☐ Other

Primary Exposure Forms

☐ Solid ☐ Liquid ☐ Gas ☐ Fume ☐ Particulate ☐ Vapor ☐ Mist ☐ Nano ☐ Other

Frequency of Exposure

☐ One Time ☐ Daily ☐ Weekly ☐ Monthly ☐ Quarterly ☐ Annually ☒ Variable

Duration of Exposure (per exposure event)

☐ <1/2 hour ☐ 1/2 - 2 hours ☐ 2 - 6 hours ☐ 6 - 8 hours ☐ > 8 hours ☐ Variable

PHYSICAL HAZARD

Type of Hazard

Thermal Stress: ☐ Heat ☐ Cold

☐ Ergonomic (Specify):

Acoustic: ☐ Infrasound and low-frequency sound ☒ Noise ☐ Ultrasound

☐ Electromagnetic Radiation & Fields (Specify):

Frequency of Exposure

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Duration of Exposure (per exposure event)

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Single Hazard Qualitative Exposure Assessment Form

Control Strategy

☐ No controls in-place or specified in RSS or Work Plan/Package

☐ [1]Engineering:

☒ [2]Administrative: Worker rotation, intermittant use with total time less than 30 min per day.

1. Engineering Control codes: GB – Glovebox, GV – General Ventilation, Hood – Other LEV Hood, I/E – Isolate or Enclose hazard, LH - Lab Hood S – Shielding, W – Wet Methods; 2. Administrative Control Codes: T –Training, L/P – Labeling or Postings, P – Written Procedure/Plan; LT – Limited Stay Time, W/R – Modified Work/Rest Cycle, BEI – Biological Monitoring, MS – Medical Surveillance

Controls Effective:

☒ Yes ☐ No ☐ Uncertain Comments:

Exposure Assessment Rating

(Health Severity Rating (1-4)	+	Exposure Rating) Rating (1-4)	x	Certainty Rating (1-3)	=	QEA Rating (2-24)
4		**2**		**1**		6

Exposure Decision

☒ **Acceptable (2-7)** document and schedule follow-up assessment	☐ **Uncertain (8-15)** prioritize for further information gathering	☐ **Unacceptable (16-24)** Implement control measures and prioritize for Follow-up assessment

Was hazard considered Low Risk (Acceptable)?

☐ **No**, proceed with Follow-up section ☒ **Yes**, describe justification for classification as acceptable or "Low Risk"

Acceptable Exposure Justification: HPD provides adequate reduction. Exposure is non-continuous and of short duration and equipment is not in operation continuously for >10 min.

Follow-up

Follow-up Assessment Priority: Schedule: ☐ Month ☐ 6 months ☒ 1 year ☐ 3 years ☐ Other:

Is Quantitative Exposure Monitoring recommended? ☐ Yes ☒ No

Recommendations/Comments:

Qualified H&S Professional: Billey Thomas, CSP Date: 09/12/2018

QEA Rating Tables

Table 1: Health Severity Rating

Rating		Criteria
HSR		**Effects from Over Exposure**
1	**Negligible**	Negligible or reversible effects of little concern
2	**Minor**	Minor or reversible health concern Note: This applies to chemical agents classified as a *Slight Health Hazard. Examples for using this rating for physical agents include: heat fatigue, discomfort from repetitive stress tasks, minor skin burn not requiring medical treatment, etc.
3	**Medium**	Medium to severe, reversible health concern. Note: This applies to chemical agents classified as a *Moderate Health Hazard. Examples for using this rating for physical agents includes temporary threshold shift in hearing, heat exhaustion, reversible repetitive stress disorders requiring medical intervention, temporary or transient sight impairment, minor skin burns (UV or IR) requiring medical treatment, etc.
4	**Major**	Major or irreversible health concern. Includes unknown health effects Note: This applies to chemical agents classified as a *High Health Hazard or *Extreme Health Hazard. Examples for using this rating for physical agents include: standard threshold shift in hearing, heat stroke, permanent peripheral nerve or tendon damage, ruptured disc, permanent (total or partial) loss of sight, formation of cataracts, neurological effects, sterility, etc.

**See the Hodge and Sterner toxicity classification scale

Table 2: Exposure Rating**

Rating		Criteria
1	**Negligible/Remote**	• Little to no exceedance of 10% of the OEL (i.e., 95th percentile exposure estimate is virtually always less than 10% of the OEL) • No signs or symptoms of exposure • There is sufficient quantitative exposure data to judge exposure • Very little skin contact with Agent is expected • Engineering and administrative controls are in place and functioning • Only diluted chemicals are used in the process • Very low intensity of energy source • Short exposure duration • The phase of the chemical does not allow for routine exposure
2	**Low/Occasional**	• Exposure >5% exceedance of 10% of the OEL (i.e., 95th percentile exposure estimate lies between 10% of the OEL and 50% of the OEL) • No specific signs or symptoms of exposure • Qualitative monitoring indicates insignificant levels of hazard • Only incidental skin contact with Agent • There is exposure potential • Engineering and administrative controls are available but effectiveness is questionable
3	**Medium/Probable**	• Exposure >5% exceedance of 50% of the OEL (i.e., 95th percentile exposure estimate lies between 50% the OEL and the OEL) • Air concentrations may exceed established action levels • Routine skin contact with chemical is expected
4	**High/Likely**	• Exposure >5% exceedance of the OEL (i.e., 95th percentile exposure estimate > OEL) • Signs and symptoms are evident • High generation of airborne particles or vapors

** Use of personal protective equipment (including respirators) shall not be taken into account when determining the exposure rating.

Table 3: Certainty Rating

Rating		Criteria
1	**Certain**	The environmental agent's exposure profile and/or health effects are well-understood. The industrial hygienist has high confidence in the acceptability judgment.
2	**Uncertain**	There is enough information to make a judgment, but further information gathering is warranted to verify the exposure assessment.
3	**Highly Uncertain**	The acceptability judgment was made in the absence of significant information on the exposure profile and/or health effects.

QEA Rating = (Health Severity Rating + Exposure Rating) X Certainty Rating