

# CSE Moderate Hazard Atmosphere Sanitary Manhole Repair Risk Assessment

0180-00 RA Rev 0 12-07-06

## 1. RISK ASSESSMENT FOR: CSE MODERATE HAZARD ATMOSPHERE- SANITARY MANHOLE REPAIR

WORK LOCATION:	Throughout City	DESCRIPTION OF WORK:	Sanitary Manhole Repair		
COMPLETED BY:	Utilities Construction & Maintenance- Feb 18, 2014 Revised- N. Peters- Jan 17, 2019	ASSESSMENT DATE:	February 18, 2014	RANKING:	Medium

## 2. WORK ACTIVITIES: (Include PPE Requirements for Quick Reference)

List Task Activity: Sanitary Sewer Manhole Repair

**PPE Required:** Ventilation (minimum 1100 cfm fan) must be done for moderate hazard atmospheres- outlet of the ventilation fan ducting must be positioned as close as practicable to the entry worker, Personal Gas Monitors must be bump tested prior to use and are to be set as per WorkSafe BC - Terms of Acceptance- AR20170089 (O<sub>2</sub>- 20.2% to 20.8%) (LEL- 5%) (CO-25 ppm) (H<sub>2</sub>S- 5ppm)

Each worker entering must wear the following: washable coveralls or chest waders, waterproof steel-toed boots, hard hat, rescue harness (attached to tripod or Davitt Arm) rubber gloves or heavy nitrile gloves, half face respirator (with tight fitting goggles-NO SAFETY GLASSES) or full face respirator with OV/AG- P-100 HEPA Filtered Cartridges (OV- Organic Vapour, AG- Acid Gas, P-100- particulate filter)

WorkSafe BC- Terms of Acceptance- AR201700089- Valid until: November 7, 2022

## 3. HAZARDS & RISK LEVEL RATINGS: SCORE = C + P + E = Rate (3-4 are LOW) (5-6-7 are MEDIUM) (8-9 are HIGH) priority

HAZARD #	HAZARD IDENTIFICATION	CONSEQUENCES	PROBABILITY	EXPOSURE	RISK	RATING L/M/H
1	Traffic (vehicular, pedestrian)	3	2	1	6	Medium
2	Overhead utilities (Overhead lines above Manholes)	3	2	1	6	Medium
3	Confined space (atmospheric hazards from sewer or vehicles near the entrance of the space including but not limited to: Carbon Monoxide, Carbon Dioxide, Hydrogen Sulphide, Particulates, Combustible Gases, Toxic/Corrosive materials, etc.)	3	3	1	7	Medium
4	Trips, slips, falls, strains, sprains	1	2	1	4	Low
5	Tools (Hand/Power/Overhead Hazards)	1	3	1	5	Medium
6	Biological Hazards (Needles or other forms of biologicals)	3	2	1	6	Medium
7	Noise/Vibration	1	2	1	4	Low

8	Limited Access/Egress, Congested Work Area, Ergonomics- Static position, Restricted Means of Communication, Structural Hazards (deteriorating concrete, ladder rungs, etc.)	1	3	1	5	Medium
9	Engulfment/Entanglement	3	1	1	5	Medium
10	Electrical/Electric Shock/Explosion Hazards (generator or inverter, electrically-powered equipment)	3	2	1	6	Medium
<b>RISK TOTAL:</b>		<b>2</b>	<b>2</b>	<b>1</b>	<b>5</b>	<b>Medium</b>

Add up the individual columns: (Consequence, Probability, Exposure, Risk and divide by number of Hazards)

#### 4. MATRIX FOR RANKING THE HAZARDS:

SCORE	1	2	3
CONSEQUENCES:	first aid / minor damage	lost time injury/moderate damage	fatality / major damage
PROBABILITY:	unlikely	possible	likely
EXPOSURE:	rarely (less than 1/month)	often ( 3 times/week)	everyday

#### 5. CONTROL MEASURES FOR EACH HAZARD IDENTIFIED IN SECTION 3

HAZARD #	LIST ALL EXISTING CONTROL MEASURES (Eliminate, Substitute, Engineering, Administrative, PPE)	RECOMMENDATIONS	Date required	Person Responsible	Initial when complete
1	Closed site, traffic control devices, TMP, TCP's, education/training				
2	Monitor overhead utilities in close proximity when using vac truck or other equipment with boom, education/training				
3	Ventilation, Retrieval System, Gas Detection at Terms of Acceptance set points, RA/SWP/ CSE Permit, PPE as listed above				
4	3 points of contact, proper footwear, gloves, additional intrinsically safe lighting if needed.				
5	Follow manufacturers specifications, SWP/RA for tool use tethered pail to hand down tools- entrant wears hard hat.				
6	Work at lowest flows as per Terms of Acceptance, Utility/Wastewater workers are offered Twin-Rex (Hep A & B Vaccination) as well as Tenuous. Ensure operators are trained in Safe Needle Disposal-				

	Internal City of Kelowna training program. Ensure that needle disposal kits are in truck- contain PPE, tongs, sharps containers, fa kits and disinfectant wipes)				
7	Proper positioning of ventilation, Hearing Protection, ensure good communication (pre-job meeting/tailgate/FLRA to confirm verbal and visual communications)				
8	Pre-inspect Sanitary Manholes for condition of the space prior to entry, good housekeeping around entrance to space, proper body positioning, take micro breaks, vary task/roles when possible, stretch, 3 point of contact, wear all required CSE equipment as per above listing and correlating SWP. Portable lighting and headlamp/flashlight-must be intrinsically safe. ensure good communication (pre-job meeting/tailgate/FLRA to confirm verbal and visual communications)				
9	Work at lowest flow times- per Terms of Acceptance, visually monitor flow when in space, good housekeeping, retrieval line management- don't get it tangled				
10	Use GFCI/Intrinsically safe equipment.				

## 6. HIERARCHY OF CONTROL MEASURES: (Must be followed in the order below)

ORDER	CONTROL	DESCRIPTION
1	<b>ELIMINATION:</b>	Can the hazard be removed at the source? Can the task be eliminated entirely? <u>Example:</u> eliminating the need to have a worker enter an excavation by hydro-excavating to expose underground infrastructure.
2	<b>SUBSTITUTION:</b>	Can a hazard, hazardous process or hazardous material be substituted with one with no hazards? <u>Example:</u> using salt water brine instead of a chemical for deicing the roads.
3	<b>ENGINEERING:</b>	Engineering controls include isolation, ventilation and equipment modification. These controls focus on the source of the hazard. <u>Example:</u> a guard placed around a saw blade, or a shoring system placed in an excavation.
4	<b>ADMINISTRATIVE:</b>	Remove or reduce the exposures by reducing the duration, frequency and severity of exposure to hazards. <u>Example:</u> changes to work procedures & practices, scheduling, job rotation, breaks during heat/cold exposure.
5	<b>PPE:</b>	Personal Protective Equipment does not control the hazard but reduces the effect of exposure to the hazard has on the worker. PPE must always be the last line of defense <u>Example:</u> earplugs, latex gloves, CSA boots, CSA Hard Hats

## 7. REVIEWED BY:

DATE	REVISION DATE	PRINT NAME	POSITION	SIGNATURE
Nov 16/2016		Nathan Peters	OHS Advisor	<i>Nathan Peters CRSP</i>
	Feb 14, 2018	Nathan Peters	OHS Advisor	<i>Nathan Peters CRSP</i>
Jan 17/2019		Nathan Peters	OHS Advisor	<i>Nathan Peters CRSP</i>

### THE HAZARD IDENTIFICATION AND ASSESSMENT PROCESS

1. Identify the task to be assessed, determine if the task is **High**, **Medium** or **Low** risk
2. Include workers who have experience in performing the task, ensure the process is led by someone who has training and experience in conducting hazard assessments. These individuals must have some type of formal training.
3. Identify hazards associated with the tasks. Consider **PHYSICAL**, **CHEMICAL**, **BIOLOGICAL**, AND **PSYCHOLOGICAL**
4. Rate the hazards by degree of risk using the following matrix:

SCORE	1	2	3
<b>CONSEQUENCES:</b>	first aid / minor damage	lost time injury/moderate damage	fatality / major damage
<b>PROBABILITY:</b>	unlikely	possible	likely
<b>EXPOSURE:</b>	rarely (less than 1/month)	often ( 3 times/week)	everyday

**TOTAL** the three columns: (T)

- 3-4 are **low** priority hazards
- 5-7 are **medium** priority hazards
- 8-9 are **high** priority hazards

The **high** priority hazards are addressed first, followed by the **medium** priority hazards. **Low** priority hazards may not require attention at this time, they may simply require monitoring. The Hierarchy of Control Measures must be followed when eliminating or mitigating hazards in the following order:

1	<b>ELIMINATION:</b>	Can the hazard be removed at the source? Can the task be eliminated entirely? <u>Example:</u> eliminating the need to have a worker enter an excavation by hydro-excavating to expose underground infrastructure.
2	<b>SUBSTITUTION:</b>	Can a hazard, hazardous process or hazardous material be substituted with one with no hazards? <u>Example:</u> using salt water brine instead of a chemical for deicing the roads.
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Hazard Assessments **must be reviewed** in accordance with Hazard Assessment Program Guide.