

Sample Job Hazard Analysis
Cleaning Inside Surface of Chemical Tank - Top Manhole Entry

| STEP | HAZARD | NEW PROCEDURE OR PROTECTION |
|---|---|---|
| 1. Select and train operators. | Operator with respiratory or heart problem, other physical limitation Untrained operator--failure to perform task | <ul style="list-style-type: none"> ● Examination by industrial physician for suitability to work ● Train operators ● Dry run [Reference: National Institute for Occupational Safety and Health (NIOSH) Doc #80-406] |
| 2. Determine what is in the tank, what process is going on in the tank, and what hazards this can pose. | Explosive gas Improper oxygen level Chemical exposure-- Gas, dust, vapor: Irritant Toxic Liquid: Irritant Toxic Corrosive Solid: Irritant Corrosive | <ul style="list-style-type: none"> ● Obtain work permit signed by safety, maintenance and supervisors ● Test air by qualified person ● Ventilate to 19.5% - 23% oxygen and less than 10% LEL of any flammable gas. Steaming inside of tank, flushing and draining, then ventilating, as previously described, may be required ● Provide appropriate respiratory equipment - SCBA or air line respirator ● Provide protective clothing for head, eyes, body and feet ● Provide parachute harness and lifeline [Reference: OSHA standards 1910.106, 1926.100, 1926.21(b)(6); NIOSH Doc #80-406] ● Tanks should be cleaned from outside if possible |
| 3. Set up equipment. | Hoses, cord, equipment – tripping hazards Electrical - voltage too high, exposed conductors Motors not locked out and tagged | <ul style="list-style-type: none"> ● Arrange hoses, cords, lines and equipment in orderly fashion, with room to maneuver safely ● Use ground-fault circuit interrupter ● Lockout and tag mixing motor, if present |
| 4. Install ladder in tank. | Ladder slipping | <ul style="list-style-type: none"> ● Secure to manhole top or rigid structure |
| 5. Prepare to enter tank. | Gas or liquid in tank | <ul style="list-style-type: none"> ● Empty tank through existing piping ● Review emergency procedures ● Open tank ● Check of job site by industrial hygienist or safety professional ● Install blanks in flanges in piping to tank (Isolate tank) ● Test atmosphere in tank by qualified person (long probe) |
| 6. Place equipment at tank-entry position. | Trip or fall | <ul style="list-style-type: none"> ● Use mechanical-handling equipment ● Provide guardrails around work positions at tank top |
| 7. Enter tank. | Ladder - tripping hazard Exposure to hazardous atmosphere | <ul style="list-style-type: none"> ● Provide personal protective equipment for conditions found [Reference: NIOSH Doc #80-406; OSHA CFR 1910.134] ● Provide outside helper to watch, instruct and guide operator entering tank, with capability to lift operator from tank in emergency |
| 8. Cleaning tank. | Reaction of chemicals, causing mist or expulsion of air contaminant | <ul style="list-style-type: none"> ● Provide protective clothing and equipment for all operators and helpers ● Provide lighting for tank (Class I, Div. I) ● Provide exhaust ventilation ● Provide air supply to interior of tank ● Frequent monitoring of air in tank ● Replace operator or provide rest periods ● Provide means of communication to get help, if needed ● Provide two-man standby for any emergency |
| 9. Cleaning up. | Handling of equipment, causing injury | <ul style="list-style-type: none"> ● Dry run ● Use material-handling equipment |