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The Pale Yellow Solid in Tank 45

Joseph Dartt, CIH

**Region VII Enforcement Programs Industrial Hygienist
Occupational Safety and Health Administration**

TANK #45

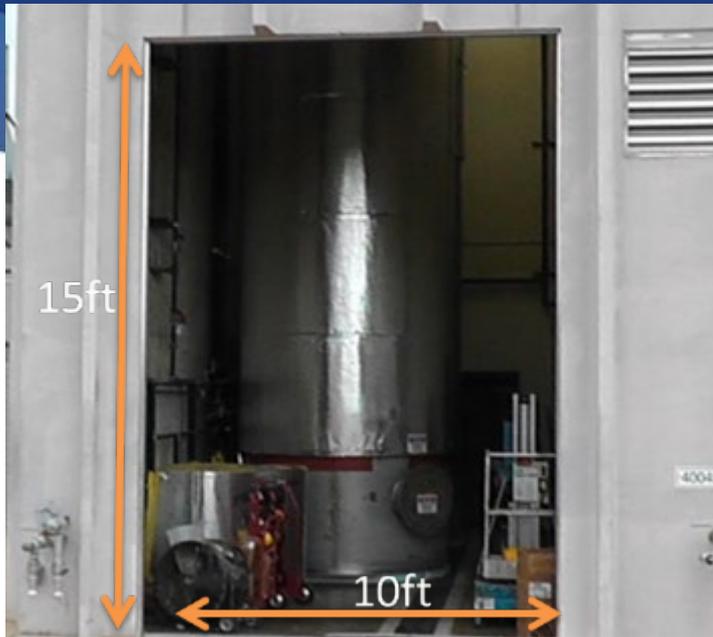
Supervisor 2009

| | |
|--------------|---|
| HEALTH | 2 |
| FLAMMABILITY | 1 |
| REACTIVITY | 1 |
| Hazard | 8 |

DANGER

CONFINED SPACE
ENTER BY
PERMIT ONLY

Reason for Inspection



Not a lot of space here...



Background



Incident

- Expected 3-5 days
- Tech Sheet – Not SDS
 - Pale Yellow Liquid
- PRCS entry procedures
- 2 Entries
 - 30lb
 - 60lb



Incident

- Symptoms On-set
- Heat Related?
- Medical Treatment



Diagnosis

- Methemoglobinemia (methgb)
 - Initial methemoglobin – 72.6%
 - Multi-system organ failure
 - Cardiac arrest during transfer to tertiary hospital
 - Resuscitated and transferred
- Unknown cause
 - Enzyme deficiency
 - Prescription medication
 - Occupational exposure

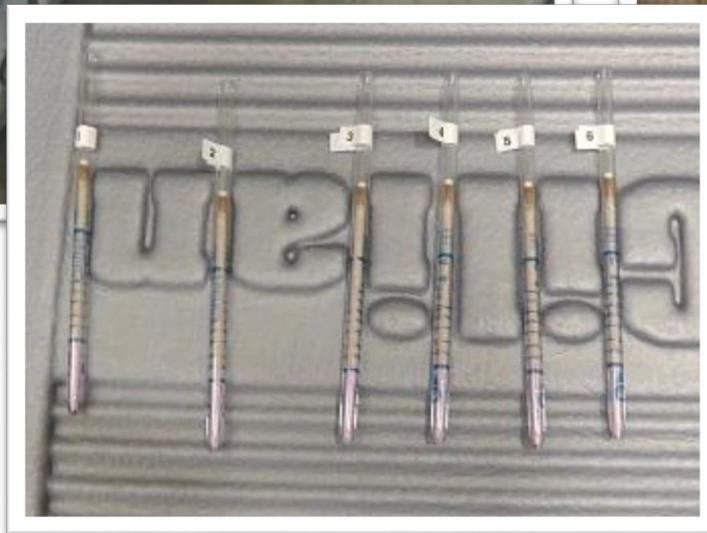
National Office Assistance

- Office of Occupational Medicine and Nursing (OOMN)
 - No reported methgb from isocyanates
- Salt Lake Technical Center – Health Response Team

Health Response Team



Results



Atmosphere



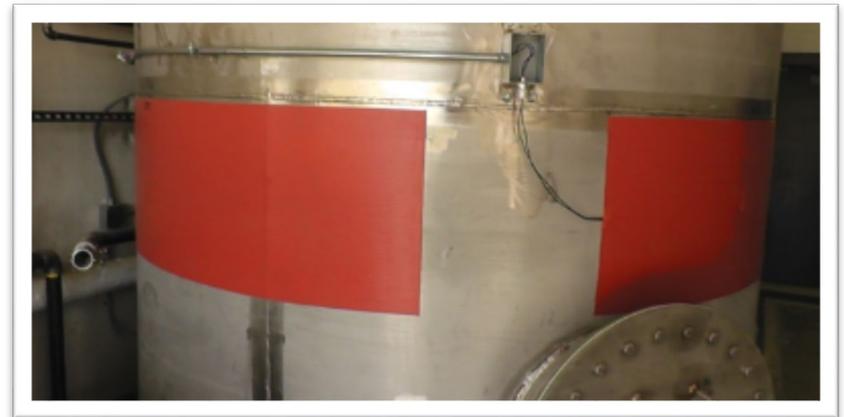
Air Sampling Results

| Chemical | Results | OSHA PEL | ACGIH TLV * | NIOSH IDLH |
|--------------------|--------------------------|----------|-------------|------------|
| Aniline | 193.54 ppm 205.85 ppm | 5 ppm | 2 ppm | 100 ppm |
| P-Toluidine | 44.12 ppm 51.07 ppm | N/A | 2 ppm | N/A |

* Skin Notation – potential significant contribution to the overall exposure by the cutaneous route, including mucous membranes and the eyes, by contact with vapors, liquids, and solids

How'd this happen?

- How did aniline and p-toluidine come to be in the tank?
 - Runaway exothermic reaction



Entrant

- 5 weeks in hospital
- 2 weeks in rehabilitation hospital
- Permanent cognitive impairment, dysphagia, dysarthria, balance and coordination impairment, malnutrition, fatigue, and anemia
- Unable to return to work

Resolution

- The majority of 1910.146 was cited
 - 14 violations
 - 146(c)(9)(i): General requirements
 - (d)(2): Identify and evaluate
 - (d)(3)(i), (iv), (vi): PRCS procedures
 - (d)(4)(i), (ii): Testing equipment
 - (d)(4)(iv): Appropriate PPE
 - (d)(5)(i), (ii): Determine / test acceptable entry conditions
 - (h)(1), (i)(1), (i)(2), (j)(1): Entrant / supervisor duties

Resolution

- Hazard Communication
 - 1910.1200(h)(1): Hazard training
 - 1910.1200(g)(8): SDS onsite
- Total penalties
 - \$30,000
 - Small employer – received significant reductions
 - The employer accepted all citations

Abatement Method

- Safety Team
 - Bidding Strategy
 - Site Review
 - Supplemental Control

Conclusion

- Incongruence between past jobs and present conditions
- Incorrect set of assumptions
- Develop a system to recognize and address assumptions

Many Thanks

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Dr. Jenni Amani, OOMN

Thank you for your commitment

Joe Dartt, CIH
Region VII Industrial Hygienist
dartt.joe@dol.gov
314.425.4261 x230



www.osha.gov

800-321-OSHA (6742)