Storage Tanks and Containment
Agenda

- Background
- Safety
- Facility design
- Large tanks
- Containment “do’s and don’ts”
Experience

• Bachelors degree in Construction Management
  • Colorado State University
• Large scale commercial construction
  • Children’s Hospital (Denver)
  • Sun Microsystems (Broomfield)
  • Denver Botanical Gardens
• Hands on retail experience
• Design of modern retail facilities
Tanks, Containment and Plumbing.
Safety
It is the top priority!

• Send all your employees home safe
  • Fall protection
    • OSHA Defines anything over 6’ (CFR 1926.501)
    • Engineer out fall hazards
      • Catwalks and Stairs
    • PPE requires specific training
      • Do not tie them off and call it good
• Don’t rely on the safety guy
  • Train your eye
Regulations are tightening
Do not get caught off guard!

• Changes after West Texas
  • Local code review on new and existing facilities
  • Fire Departments
  • Code Officials
  • Know your zoning and products stored!
  • OSHA and EPA
Large Tanks

- Usually considered 100,000 gallons or more
- **Construction** – API 650 (American Petroleum Institute)
- **Inspection** – API 653 “Inspection, repair, alteration and reconstruction of steel aboveground storage tanks used on the chemical and petroleum industries”
  - Ensure inspector is API 653 Certified
    - Establish baseline tank condition and corrosion rates
Large Tanks

• Lined tanks vs. secondary containment

  • Lined tanks (bladders)
    • Ensure there is a leak detection system installed
    • Review state and local regulations (more states requiring liners under tanks)
    • Is it true secondary containment? (valve boxes)
    • Recommend filling with partially with water before fertilizer. Liners can leak!
Large Tanks

• Lined tanks vs. secondary containment

  • Secondary containment (no bladder)
    • When planning ensure adequate size
    • Plan for future growth
    • Consider access into containment after it is built
    • Large concrete structures can be a challenge to maintain
    • Double check calculations!
Containment
Steel or Concrete?

• Concrete
  • Traditionally used
  • Structurally sound
  • Contractor limitations
  • Weather limitations
  • Design thickness, reinforcement and placement are critical
  • Control joints, control joints, control joints!!
    • Floors, walls and load pads
  • Housekeeping
Containment
Steel or Concrete?

• Steel
  • Can be built in sections
  • Can be built in a controlled environment
  • Not as weather dependent
  • Does not crack like concrete
  • Good for leased facilities (movable)
  • Easier to modify/add on to
  • Still need good housekeeping!
Warehouse and Indoor Containment

• **Indoor Tanks**
  • Recommend indoor tank separation
  • Regularly inspect plumbing and valves
  • Ensure material compatibility
  • Consider automation for efficiency

• **Warehouse**
  • Authority Having Jurisdiction
  • Inspections
Tank Anchoring

- Wind
- Floatation
- Seismic
Questions/Discussion

Thank You!

Martin Beauprez
Crop Production Services
14560 CR 64
Greeley, CO 80631
970-381-3929
Martin.beauprez@cpsagu.com