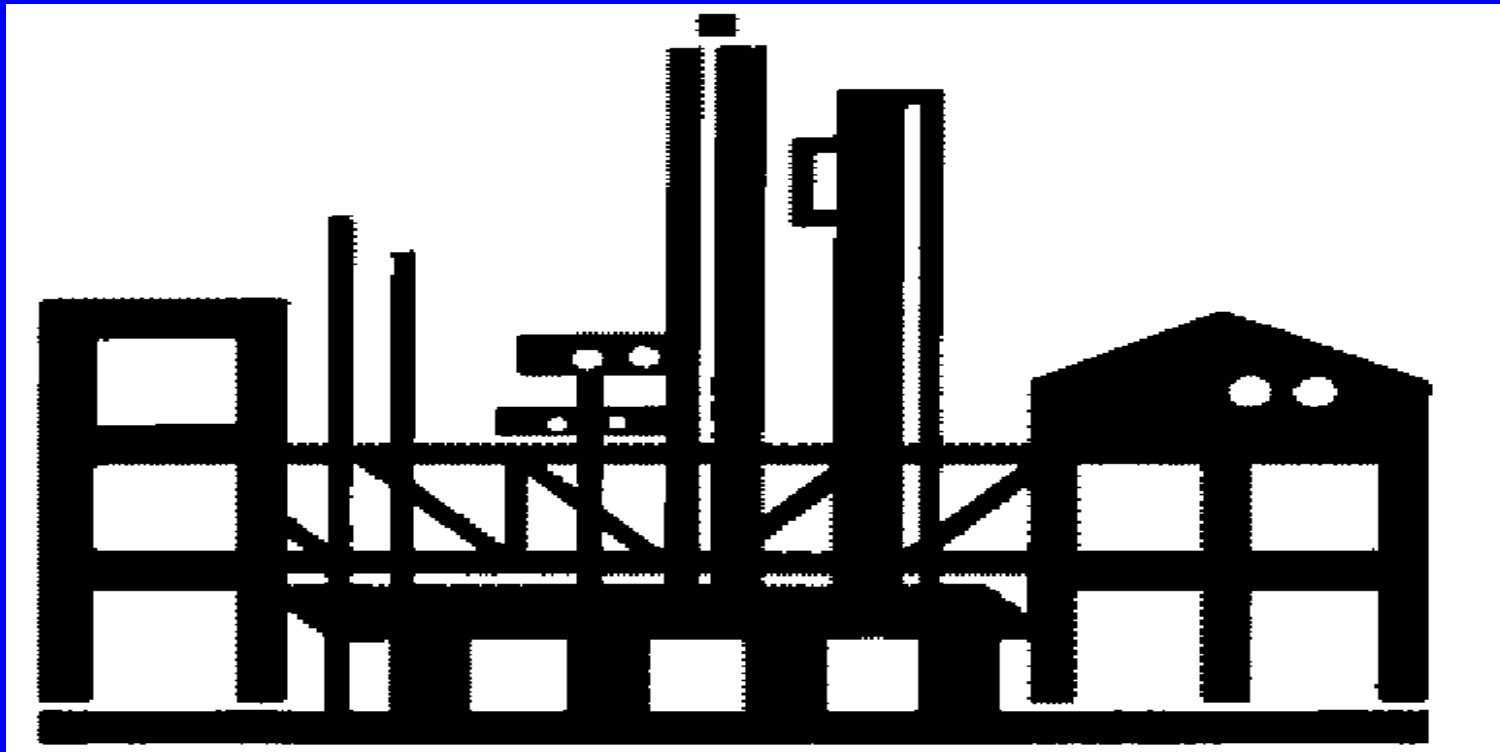


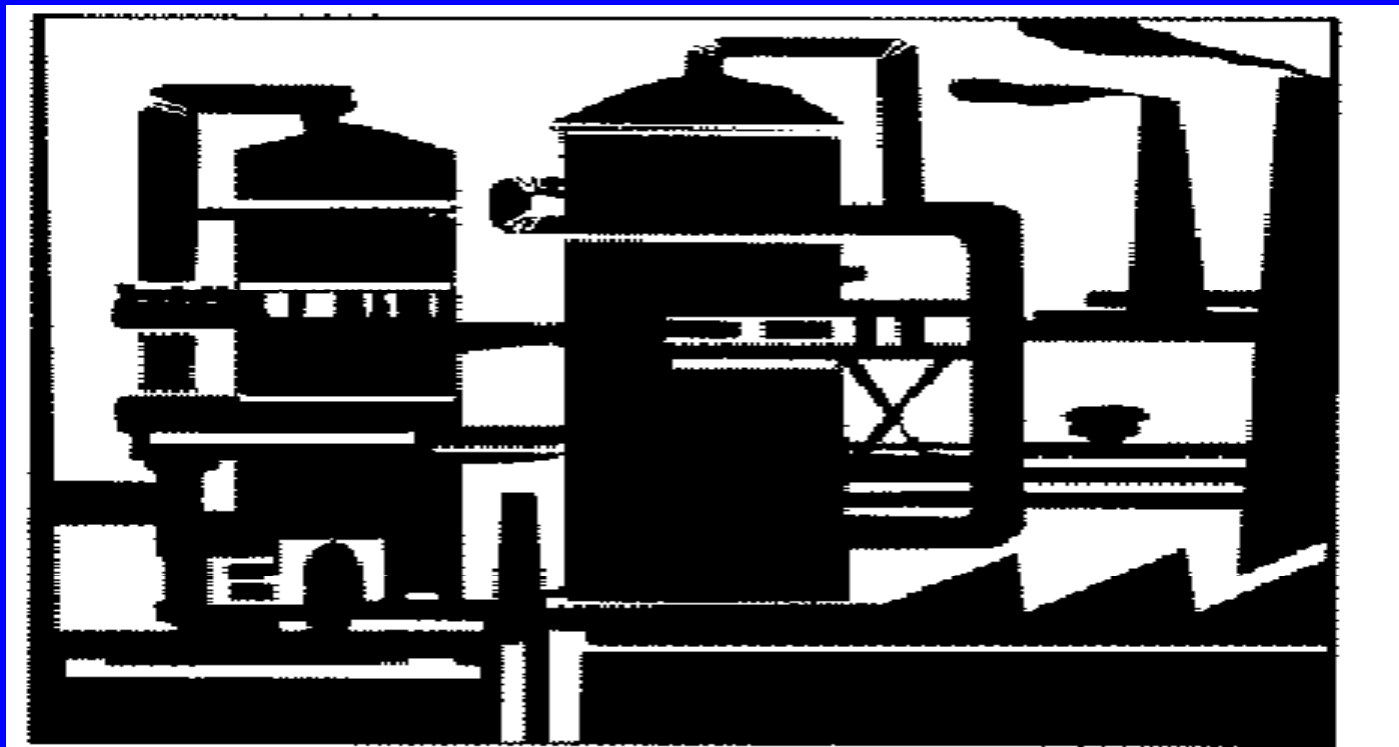
# NFPA

## Spill Control Requirements



# NFPA

## Spill Control Requirements



# Presenter

---

- Carl Rivkin, P.E.
  - Senior Chemical Engineer
  - Questions?
  - 617-984-7418 or
  - [crivkin@nfpa.org](mailto:crivkin@nfpa.org)
-

# Fire Control/Spill Control

---

- Two issues are closely interrelated
- Controlling material releases is pollution abatement and fire risk reduction
- Fires often cause significant environmental impacts beyond the impact of combustion products

# National Fire Protection Association

---

- Non-profit association founded in 1896
- Provides full range of fire safety programs
- Develops codes & standards - volunteer based
- 75,000 Members & 300+ Staff
- 220+ Committees
- 300+ Codes & Standards
- [www.nfpa.org](http://www.nfpa.org)

# NFPA's Mission

---

Our mission is to reduce the burden of fire on the quality of life by advocating scientifically-based consensus codes and standards, research, and education for fire - and related safety issues.

# Code Structure

---

- NFPA 30A Code for Motor Fuel Dispensing Facilities and Repair Garages covers storage at Service stations
- 30A refers to NFPA 30 Flammable and Combustible Liquids Code for spill control requirements

# NFPA 30 2000 Edition

---

- (1) New definitions added including definitions for aboveground tank, heat transfer fluid, important building, protected aboveground tank, solvent distillation unit, vapor processing system, vapor recovery system, and vault.
  - (2) A new 2.2.7 has been added to address the design, construction, and installation of vaults for aboveground tanks.
  - (3) A new 2.2.9 has been added to address the design, construction, and installation of protected aboveground tanks.
-



# NFPA 30 2000 Edition

---

- (4) The emergency vent reduction factors are now allowed for any tank containing a stable liquid, not just atmospheric storage tanks.
- (5) Under certain specified conditions, pipe joints that incorporate friction clamping components can now be used inside buildings..

# NFPA 30 2000 Edition

---

- (6) Certain rigid nonmetallic intermediate bulk containers are now recognized in Chapter 4.
- (7) The requirements for spill containment and drainage have been simplified, and new design criteria for warehouse drainage systems have been added to the Appendix A material to Section 4.8.
- (8) Explanatory information has been added to explain what Section 4.8 recognizes as a relieving-style container.

# NFPA 30 2000 Edition

---

- (9) Guidance has been added to Section 4.8 to aid the user in determining what commodities are considered to be viscous liquids.
- (10) A new fire protection design decision tree has been added for water-miscible liquids in plastic containers.

# NFPA 30 2000 Edition

---

- (11) New fire protection design criteria have been added to Section 4.8 to address the following:
  - a. Expanded foam-water sprinkler protection for palletized storage of metal containers
  - b. New criteria for sprinkler protection of rack storage of Class IIIB liquids in plastic containers
  - c. New criteria for sprinkler protection of rack storage of water-miscible liquids in plastic containers

# NFPA 30 2000 Edition

---

- d. Additional criteria for sprinkler protection of rack and palletized storage of liquids on open wire-mesh shelving
- e. New criteria for sprinkler protection of nonmetallic intermediate bulk containers in both palletized and rack configurations

# NFPA 30 2000 Edition

---

- (12) Subsection 5.3.3.1 on construction and separation of process buildings has been greatly expanded, and specific separation criteria based on building construction types are given.
- (13) Guidance for staging of liquids in operating areas has been added.
- (14) A new Section 5.4 has been added to address recirculating heat transfer fluid heating systems.

# NFPA 30 2000 Edition

---

- (15) Section 5.6, Loading and Unloading Operations, has been reorganized to better present the material.
- (16) A new Section 5.11 has been added to address solvent recovery distillation units.
- (17) All of the requirements for hazardous location electrical area classification have been consolidated and placed in a new Chapter 6.

# Spill Control Requirements

---

- Any tank that contains a flammable or combustible liquid must have spill control
- Most oils would be classified as combustible liquids
- Code gives 3 basic spill control options- impounding, diking, or secondary containment tanks



# Remote Impounding

---

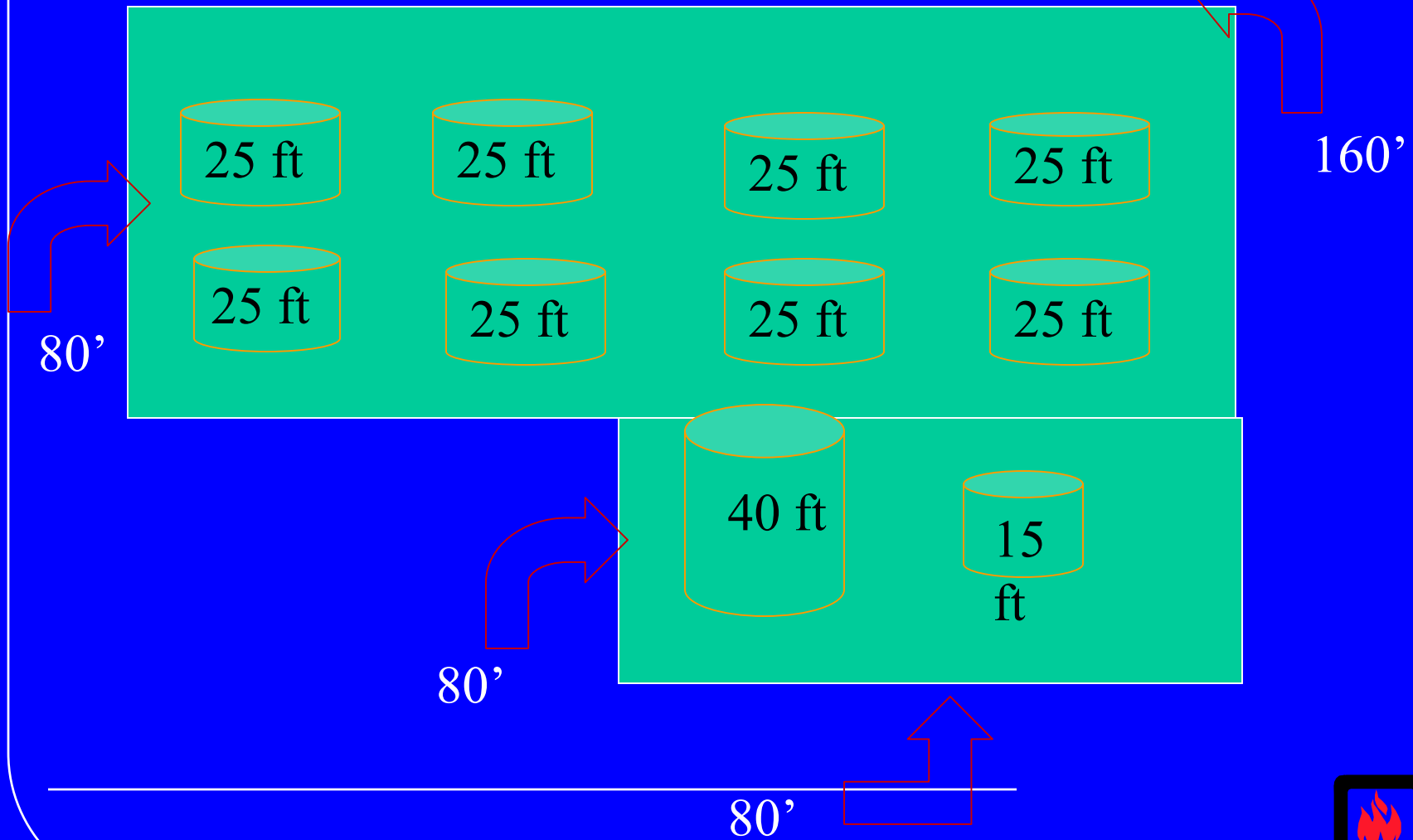
- Four basic requirements
- Drain spilled material to a remote area using a slope ◆ 1% for 50 feet
- Impounding area must capacity ◆ the largest tank
- Spill fire cannot impact tanks/property
- Liquid level 50 ft from property line

# Impounding by Diking

---

- Drain spilled material to a remote area using a slope
  - ◆ 1% for 50 feet
- Capacity ◆\* The volumetric capacity of the diked area shall not be less than the greatest amount of liquid that can be released from the largest tank within the diked area, assuming a full tank.
- Capacity of the diked area enclosing more than one tank shall be calculated after deducting the volume of the tanks, other than the largest tank, below the height of the dike.

# Diking Example



# Diking example

---

- 1. Eight 25 ft diameter tanks, one 15 ft diameter tank, and one 40 ft diameter tank, all 20 ft in height
  - 2. Volume of largest tank = 31, 416 ft<sup>3</sup>
  - 3.  $H * (160 * 80 + 80 * 80 - 12.5^2 * \pi * 8 - 7.5^2 * \pi) = 31416$
  - 4. H (dike height) = 2.1 ft
-

# Secondary Containment Tanks

---

- (a) The capacity of the tank shall not exceed 12,000 gal (45,420 L).
- (b) All piping connections to the tank shall be made above the normal maximum liquid level.
- (c) Means shall be provided to prevent the release of liquid from the tank by siphon flow.
- (d) Means shall be provided for determining the level of liquid in the tank. This means shall be accessible to the delivery operator.

# Secondary Containment Tanks

---

- (e) Alarm sounds when the liquid level in the tank reaches 90 percent of capacity and by automatically stopping delivery of liquid to the tank when the liquid level in the tank reaches 95 percent of capacity.
- (f) Spacing between adjacent tanks shall be not less than 3 ft.
- (g) Tank shall be impact resistant
- (h) Where the means of secondary containment is enclosed, it shall be provided with emergency venting in accordance with 2.2.5.2.