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**OSHA**

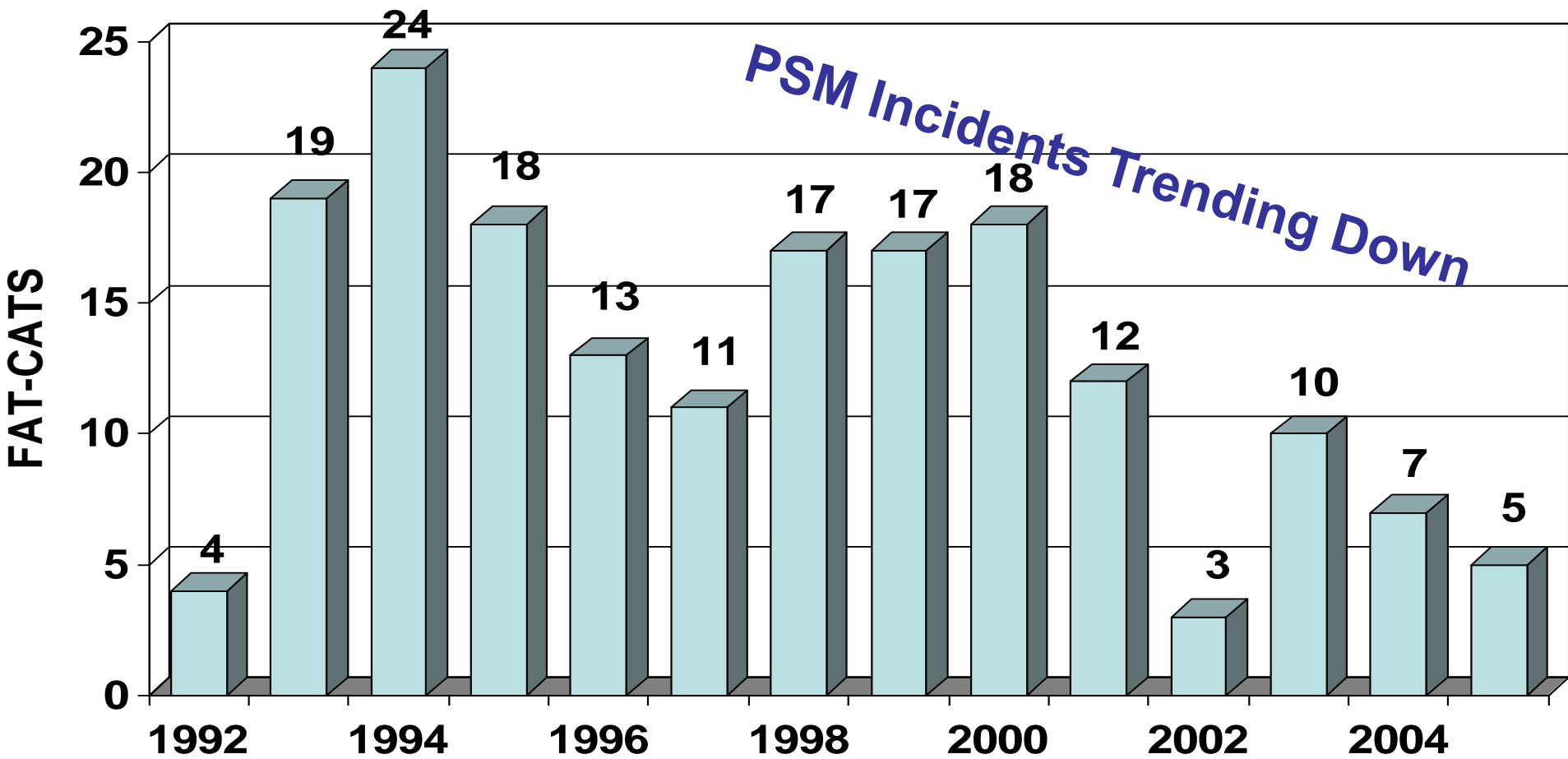
adds value to business,  
work and life.

**OSHA's Refinery NEP Perspective**  
*One Year Later*  
**and**  
**Upcoming Chemical Safety**  
**Enforcement Initiative**

**Refinery NEP Workshop – HESS Club**  
**Houston, Texas.**

**October 30, 2008**

# Fatality/Catastrophe PSM Incidents



# Refinery National Emphasis Program

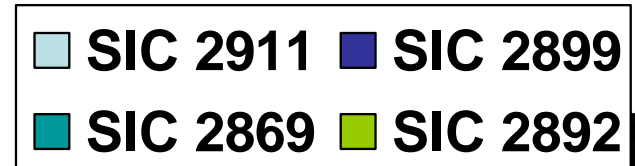
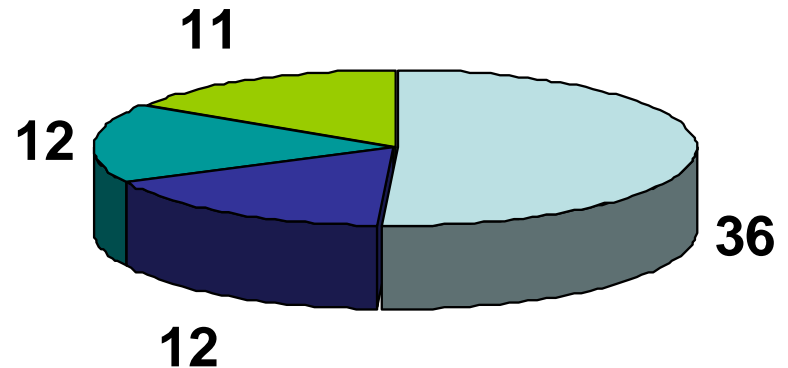
- OSHA national PSM enforcement program
  - Program (NEP) for inspecting petroleum refineries
  - **SIC 2911 (NAICS 324110)**
- Contains policies and procedures to **verify employers' compliance** with OSHA's PSM standard
- **Primary Purpose: Tool for OSHA CSHOs** to determine compliance w/PSM

# Why Refinery NEP

- Need for OSHA to conduct programmed inspections at high risk facilities
- FAT/CAT data indicates refineries are good place to start
  - SIC 2911 experienced 36 FAT/CATS since 1992
  - Top 4 SICs account for 40% of all PSM FAT/CATS
  - Refineries account for 20% of Total
  - Refinery FAT/CATs > other 3 top SICs combined
- Recent Refinery Incidents
  - BP TCR

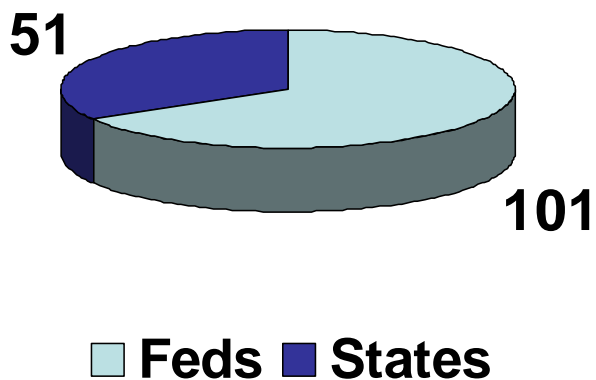
## Refinery FAT/CATS by Most Frequent SIC

178 Total PSM FAT/CAT Incidents

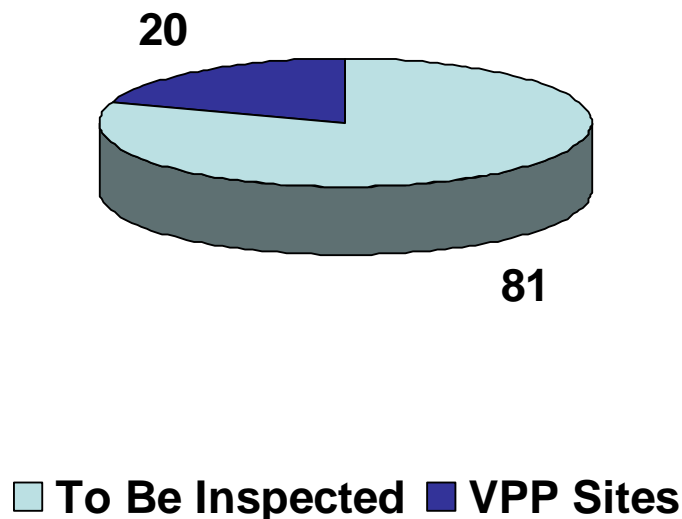


# Breakdown of 152 U.S. Refineries

## Federal vs. State-Plan Refineries

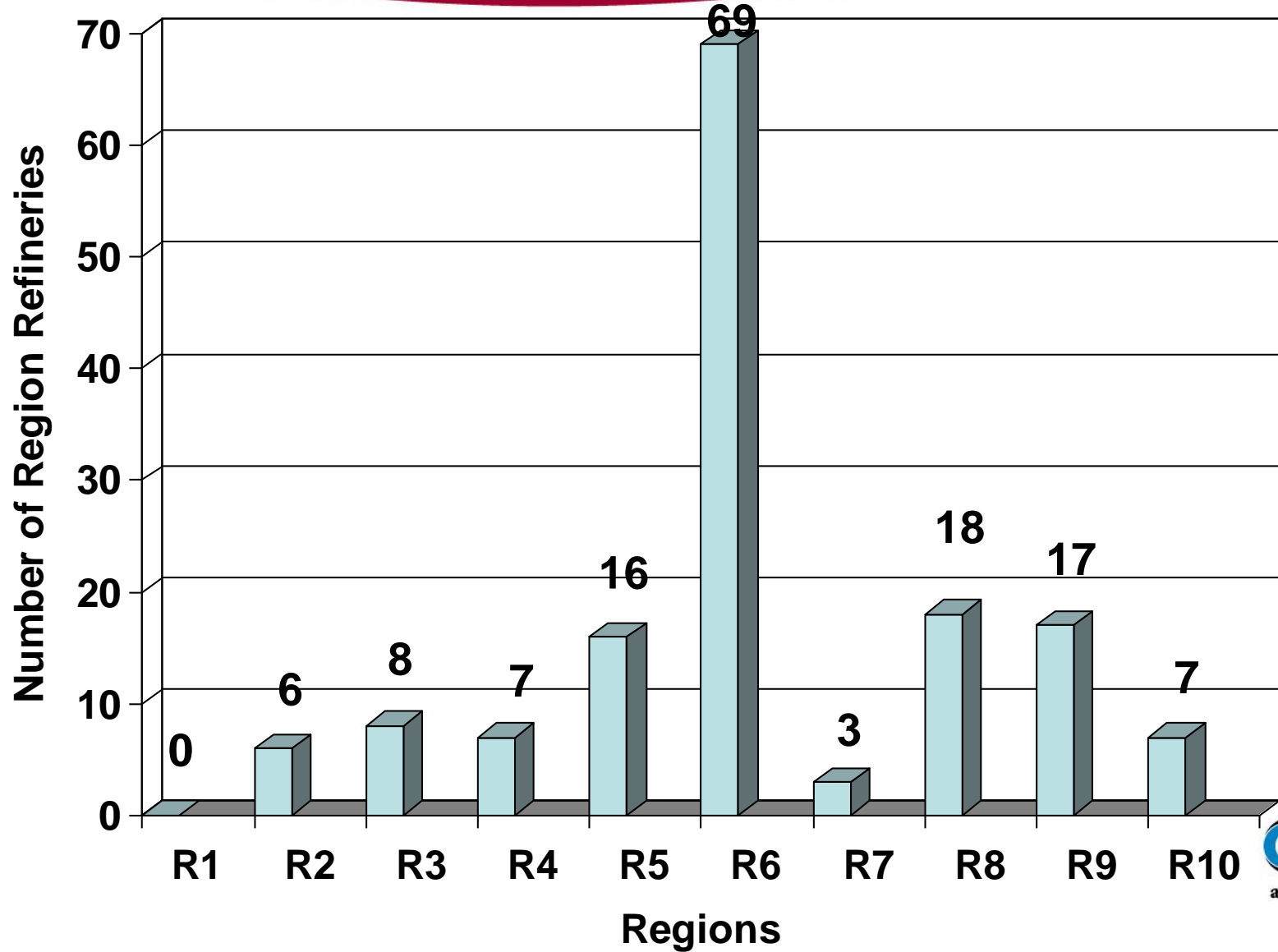


## 101 "Federal NEP" Refineries



From EPA RMP Submittals

# Distribution of U.S. Refineries by Region



# NEP Focus Areas

- Prioritize on **Implementation** versus the existence of documentation
  - Ensure that employers do what they have committed to do
- RAGAGEP
  - 119(d)(3)(ii) – “...shall comply with RAGAGEP”
  - Mostly Equipment
    - Vessels, Piping, Relief Systems, Blowdown Systems
- PHA
  - 119(e)(1) - “...shall identify, evaluate, and control hazards of process”
- Equipment Deficiencies
  - 119(j)(5) – fix deficient equipment before further use or take necessary means to assure safe operation until deficiency can be fixed at next opportunity
- Others

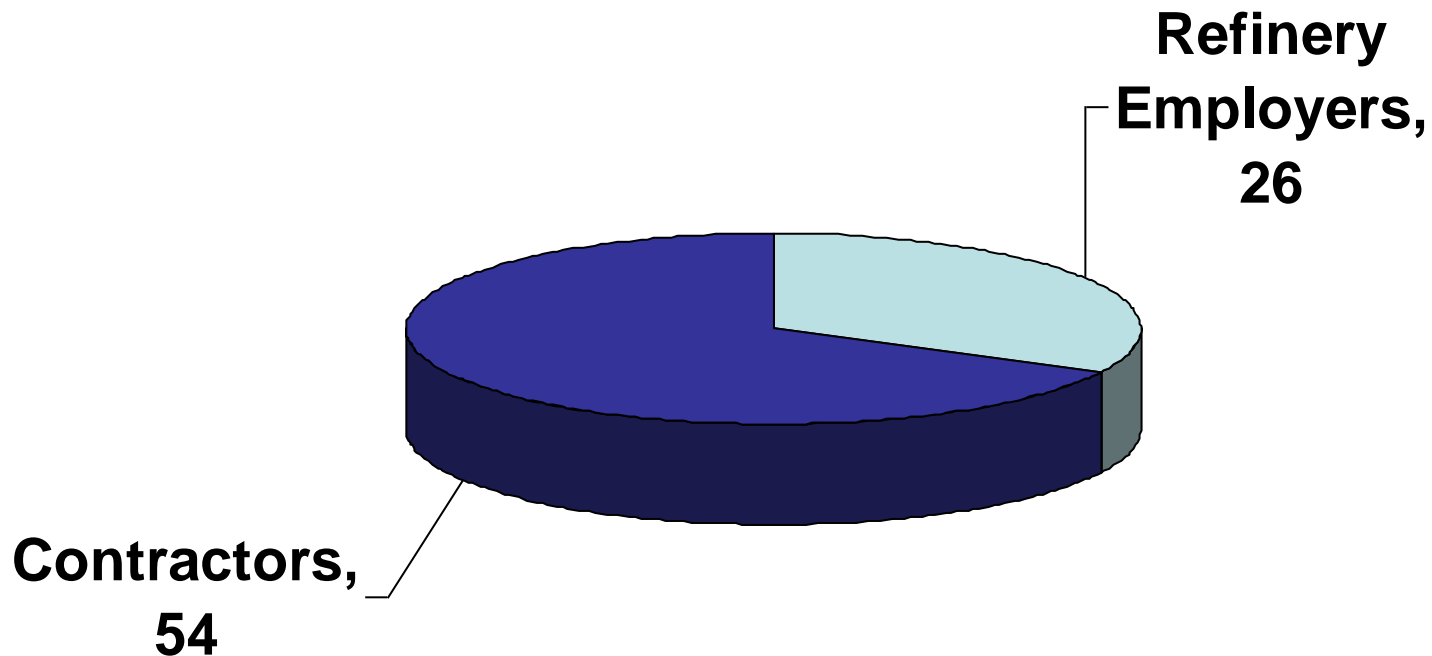
# New Inspection Strategy

- Evaluate PSM compliance using Inspection Priority Items (IPI)
  - Gap Analysis (Yes, No, N/A Questions)
  - Questions developed in-house
    - will work in questions provided by anybody
- List Based IPI
  - Static List
    - 95 Questions
    - Like all OSHA CPLs, posted on public website
  - Dynamic List
    - 8 to 15 questions/list
    - Changes every periodically
    - “Secret List” for inspection integrity
      - Not posted on OSHA’s public website

# NEP Inspections

## 80 Refinery NEP Inspections<sup>1</sup>

(June 7, 2007 through September 1, 2008)



1. Inspections which have been started and are at some phase of completion

# NEP Inspections to Date

Region	Refineries	Contractors	Total
I	0	0	0
II	2	2	4
III	2	0	2
IV	5	2	7
V	5	16	21
VI	9	27	36
VII	2	4	6
VIII	1	3	4
IX	0	0	0
X	0	0	0
<b>Total</b>	<b>26</b>	<b>54</b>	<b>80</b>

# NEP Inspection Summary<sup>1</sup>

- 20 NEP inspections “issued”
- 456 total citations issued to refinery employers
- 344 total PSM citations issued
  - Many more instances/deficiencies
- 9 Significant Enforcement Cases
- Average citations per NEP inspection > 23
  - Max: 46 different standards cited in 2 inspections
  - Min: 6 different standards cited

1. Federal jurisdiction data only

# Standards Cited

## Violations

• 1910.119	PSM.....	361
• 1910.147	Lock and Tag.....	23
• 1910.120	Hazwoper.....	19
• 1910.1200	Hazcom.....	7
• 1910.146	Confined Space.....	5
• 1910.307	Hazardous Locations.....	6

# NEP Violation Classifications

<b>Classification</b>	<b>Refinery Violations</b>	<b>Contractor Violations</b>
Willful	6	0
Unclassified	5	0
Repeat	8	0
Serious	394	9
Other	15	10

# NEP Penalties

<b>Penalties</b>	<b>Refineries</b>
Willful	\$390,000
Unclassified	\$329,000
Repeat	\$227,000
Serious	\$1,468,000
Other	\$11,000
<b>Total</b>	<b>\$2,424,000</b>

# Most Frequent NEP PSM Citations

## 1910.119(x)(x)

- (f)(1) Operating procedures.....49
- (d)(3) PSI pertaining to equipment .....47
- (e)(3) PHA specific criteria.....40
- (j)(4) MI Inspection & Testing .....32
- (e)(5) PHA recommendation F/U .....16
- (j)(5) Deficient Equipment.....16
- (l)(1) MOC implementation .....15

# NEP Comments

- Inspection Team Size
  - typically 3 to 4 team members
- Inspection Duration
  - On-site: 6 weeks to 4 months
  - Total time (on and off-site): 3 to 6 months
  - Time dependent on many factors
    - Size of refinery
    - Number of deficiencies
    - Violation Classification
- Low Hanging Fruit not addressed by employer

# Citation Findings

- **PHA did not address:**
  - Facility siting
    - Occupied structures
    - Pipe racks above control rooms
    - HVAC equipment on control room roof
    - Vessels near roadway
  - **Human Factors**
    - Location of isolation valves
    - Heat exchangers identified inconsistently (name vs. number)
    - Overfilling tanks and vessels
    - misdirecting flare gases and liquid/vapor mixtures
  - **Loss of utilities** and how they would affect the safety of the unit
  - **Loss of control room functions.**

# Citation Findings

- **Equipment deficiencies not corrected**
  - Charge drum with heavy corrosion between shell and support saddles
  - Toxic and flammable detectors in control room ducting not in working order
  - Building pressurization system not working
  - Unit HF detectors not in working order
  - Failure to follow RAGEGAP for relief valves – set at 270 psi with a MAWP of 150 psi and 540 psi for MAWP of 480 psi.
  - Pump with failed primary seal in service
  - Valve operate at temp above MAWT causing packing leaks
  - Vessel operate at temp above MAWT

# Citation Findings

- **Did not develop Mechanical Integrity program procedure for:**
  - Inspecting pressure vessels with integrally bonded liners
  - CUI inspections of pressure vessel and piping
  - Inspecting injection points on refinery piping
  - Addressing anomalous inspection data pertaining to metal thicknesses for pressure vessels and piping
  - Addressing application of engineered clamps to pressure vessels and piping to ensure consistent administration throughout the refinery
  - Historic data was not entered into the Risk Base Mechanical Inspection program nor the MI inspection data software until 2007
  - Inspecting pressure vessels with non-metallic linings
  - Inspection of underground piping

# Citation Findings

- **The PHA was not updated or revalidated**
  - The employer failed to consider in its unit PHA revalidations the increased production throughput in the Hydrotreater Unit and its effect on the facility's relief system capacity. The HDT Unit began exceeding the throughput design basis of 25,000 bpd in March 2001 and continued through May 2007
- The **incident investigation report** did not include the factors that contributed to the incident

# Citation Findings

- **The employer did not develop and implement written operating procedures:**
  - No SOP for control of hazards after a seal failure
  - Practice of water hose use for cooling equipment did not reflect the SOP
  - ESP does not state whether it is used for power failure or air or steam failure
  - ESP does not assign shutdown authority to a specific operator or position
  - Emergency procedures did not specify entry/trigger point
  - Normal procedures did not identify trigger for emergency procedures



# OSHA NOTICE

U.S. DEPARTMENT OF LABOR

Occupational Safety and Health Administration

**DIRECTIVE NUMBER:**

**EFFECTIVE DATE:**

**SUBJECT:** PSM Covered Chemical Facilities

## ABSTRACT

- Purpose:** This notice describes policies and procedures for implementing a pilot National Emphasis Program (NEP) to reduce or eliminate the workplace hazards associated with the catastrophic release of highly hazardous chemicals.
- Scope:** This notice applies OSHA-wide. Programmed inspections will take place in Regions I, VII and X. Un-programmed inspections will take place OSHA-wide.
- References:** See Paragraph III.
- State Impact:** State adoption is not required. See paragraph VII.
- Action Offices:** National, Regional, and Area Offices (AOs).
- Originating Office:** Directorate of Enforcement Programs (DEP).
- Contact:** Directorate of Enforcement Programs  
200 Constitution Avenue, NW, Room 3107  
Washington, DC 20210  
Phone (202) 693-1850

**DRAFT**

By and Under the Authority of

Edwin G. Foulke, Jr.  
Assistant Secretary

ABSTRACT-1

# “Chemical Plants” Compliance Directive

- Need for programmed inspections at high risk chemical facilities
- PSM inspection resources fully deployed conducting NEP
- Pilot Program for Chemical Facilities
  - Regions with few REFINERY NEP inspections
  - 1 year in duration
    - Decision near end of REFINERY NEP to fully deploy Chem CPL

## Thoughts

### – Targeting Sites to be Inspected

- Use RMP Program 3 facilities as main target for selecting sites for inspection
  - ≈ 8,000 RMP 3 covered processes
- Add SICs typically covered by PSM which are not covered by RMP

### – Inspection Strategy

- Many inspections, shorter duration
- Use Dynamic List IPI concept

# Chemical Plants Pilot NEP

- Chemical NEP Pilot Program
  - Region I – Connecticut, Massachusetts, Maine, New Hampshire, Vermont, and Rhode Island.
  - Region VII – Iowa, Kansas, Nebraska, and Missouri.
  - Region X – Alaska, Oregon, Washington, and Idaho.

# CHEMICAL NEP CPL

- Region's I, VII, and X should each complete 5-10 programmed inspections per Area Office per year using this NEP.
- Each Area Office shall randomly select inspection sites from their master lists.

# CHEMICAL NEP CPL

- For Other Regions
  - Un-programmed (complaints/referrals) type inspections may trigger Chem-NEP inspections.
  - OSHA Site Specific Targeting (SST) inspections may trigger Chem-NEP inspections.

# CHEMICAL NEP CPL

- Dynamic Questions – not available for review
  - Ammonia Refrigeration – 10 questions
  - Water and/or Wastewater Treatment – 5 questions
  - Chemical Storage – 15 questions
  - Chemical Processing and all other categories – 10 questions
- Dynamic Questions will change every few weeks.

# CHEMICAL NEP CPL

- Opening Conference
- Selection of Process Units
- Initial Walk-around Inspection of Cover Process
- Document Requests and Program Reviews
- Interviews –
- Walk-around inspection and inspection of Contractors
- Closing Conference

# CHEMICAL NEP CPL

- Expanded Inspection.

- If, during the course of the evaluation, the Team Leader (TL) determines that a large number of deficiencies may exist in the employer's PSM compliance, the TL may consult with the Area Director (AD) and expand the inspection to other units or areas.
- If there are no contractors working on or adjacent to the Selected Unit, throughout the course of the inspection, the TL will choose another PSM-covered process where contractors are known to be working and inspect those contractors.



# Questions

**Don Nguyen**  
**Assistant Area Director**  
**Houston South Area Office**  
**281-286-0583 #222**

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