



National Conference on Weights and Measures  
"That Equity May Prevail"

# Professional Development Committee

Open Hearings  
Denver, CO  
Angela Godwin, Chair



# Professional Development Committee Membership

- Angela Godwin, Chair (Ventura County, CA)
- Stacy Carlsen (Marin County, CA)
- Julie Quinn (Minnesota)
- Doug Killingsworth (Georgia)
- Cheryl Ayer (New Hampshire)
- Richard Shipman (Rice Lake Weighing Sys.)
- Tina Butcher (NIST Technical Advisor)
- Ross Anderson (Certification Coordinator)



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# 410-1 Training

Ross Anderson – Certification Coordinator



# Certification Program Growth

## Certificates Issued

\*Statistic based on October 1st to September 30<sup>th</sup> calendar year

	<b>FY10-11</b>	<b>FY11-12</b>	<b>FY12-13</b>	<b>FY13-14</b>	<b>FY14-15</b>
Count in Year	44	94	106	70	186
Cumulative	44	138	244	314	500

<b>Certification (posted)</b>	<b>Certificates</b>
RMFD (5/2010)	230
Small Scales (8/2012)	131
Package Check (8/2012)	78
Medium Capacity (4/2015)	30
Large Capacity (4/2015)	11
VTM (4/2015)	20



# 420-1 Professional Certification

## Exams in the Works

- Basic Competency – Weighing
- Basic Competency – Measuring
  
- LPG Liquid Measuring
- Price Verification
  
- *Look for Modules on website*



# 420-1 Professional Certification

## Basic Competency Exams

- Working with NCWM Board to assure best bang for the buck
- Will use same exams for service technicians and inspectors
- Will send learning objectives to state directors
  - Will an exam satisfy needs to qualify service agents for registration/licensing
  - Will states use exams to monitor training progress of inspectors



# 420-1 Professional Certification

## Format for Basic Competency Exams

- Present plan - two exams; one for weighing and one for measuring
- Part 1 of each exam to address HB44 General Code, Fundamental Considerations, NTEP
- Part 2 to address general questions from the specific code(s)
  - Weighing – all types of scales
  - Measuring – all types LMD, VTM, (Mass Flow)



# Appreciation to SME's

- The Committee appreciates the work of our SME's, Presently using 1 ½ hour web meetings to evaluate test questions in group setting – working very well
- The Committee hopes that state directors will encourage their staff to volunteer as SME – serves both the NCWM and provides a valuable learning experience
- Makes certification program possible.





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# 410-2 Training

Tina Butcher – NIST



# 410-2 Training by NIST OWM

OWM provided 47 classes in the past 12 months

- Laboratory Metrology
- Seminars on Fundamentals of Metrology and Lab Administration
- Webinars on subjects such as document control, contract review, and other procedures  
(More than 470 students participated)
  
- Weighing & Measuring Devices
- Seminar in NC on LPG Liquid-Measuring Systems (22 students/13 states)
- Seminar at CWMA on Retail Motor-Fuel (24 students/10 states)
- Webinars on Pour and Drain Procedures (27 students/16 states)



# 410-2 Training by NIST OWM (continued)

- OWM provided 47 classes in the past 12 months (cont.)
  - Package Control
    - Seminars in Nevada, California, Texas, Nebraska, Kentucky and Other States on inspection of packages for accurate labeling and net wet (105 students)
    - Seminar in Nevada on Price Verification procedures in retail stores (19 students)
- 2016 OWM Seminars
  - Awarding of more than 1,340 Continuing Education Units (CEUs)
  - More than 740 students
  - Public and Private Sector and Other Countries in SIM
- Upcoming Training (2016)
  - August 2016 – NIST Trainer Seminar – packaging
  - October 2016 – LPG (Alaska)
  - October 2016 – CNG (Utah)



# 410-3 Instructor Improvement

Tina Butcher - NIST Technical Advisor

- Thanks to states of Arizona, California, Colorado, Connecticut, Michigan, New York, Ohio, Oregon, and Pennsylvania
  - Allowed their trainers to work with NIST staff in presenting seminars
- NIST making an additional \$100,000 grant to NCWM
  - Continue to support travel and training events for the NIST Trainer Program
- NIST continuing to work on formalizing the NIST Trainer Program
  - Updating records on trainer's preferences and experience
  - Identifying needed training and development opportunities
  - Documenting requirements and guidelines for NIST Trainer Program



# 410-3 Instructor Improvement

Tina Butcher - NIST Technical Advisor

- Developing Opportunities for NIST Trainers - Upcoming
  - HB 133 class for 10 current NIST trainers
    - Testing Packages Labeled by Count & Dimension (August 2016)
  - Introductory Webinars
    - Adult Learning Principles (e.g., Bloom's Taxonomy and Introduction to ADDIE Model) (Fall 2016)
    - Overview of Instructor Competencies (Spring 2017)
  - Introductory 3-day training session for new trainers in 2017
  - Current trainers in LPG and RMFD will be invited to participate in review and revision of course materials (Spring 2017)



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# 410-4 Topics for Conference Training



# 410-4 Conference Topics

The Committee proposes presentations in the following areas:

- Building a Safety Plan for your Organization;
- Small Volume Provers (including operation, use, and interpretation of the data);
- Electric Vehicles: an overview of the test procedure and test equipment
- Relations: establishing and promoting good customer relations.
- Software-controlled systems – the verification of the versions of the software
- Understanding Transportation Network Systems
- GPS-based measuring Systems – Other Applications
- Oil truck flush systems
- Skimmers
- Regulatory Issues for Legalized Cannabis



# 410-4 Conference Topics (cont.)

- Presentation Skills
- Moisture Loss
- Documenting Investigations for Court Proceedings
- Emerging Issues
- Implementing New RMFD Price Posting and Computing Capability Revisions
- Fundamentals of the National Type Evaluation Program
- Electric Vehicles: Commercial Devices, Method of Sale, Advertising and Labeling
- Understanding the International Weights and Measures Standards Development System
- Crane Operation and Safety
- Succession Planning;
- Making Sense of Electronic Receipts and Electronics Record Laws
- Ethics for Weights & Measures Officials
- Defensive Driving

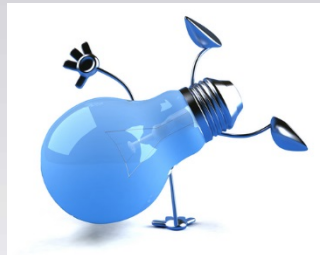




# 410-4 Conference Topics (cont.)

- Data Privacy Issues Faced by Weights & Measures Officials;
- Guidelines for Supplemental Declarations (recommended by PALS);
- Fuels Issues (Fuel Volatility, Ethanol Blending, and Biodiesel Blend);
- Public Relations (specifically dealing with aggressive/angry people)

Technical presentations given at the NCWM since 2010 are available at [www.ncwm.net/meetings/annual/archive](http://www.ncwm.net/meetings/annual/archive).



## Future topics for technical sessions at Annual meetings?



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# 2016 NCWM Safety Survey

Professional Development Committee Report  
Item 420-1 Safety Awareness



# Goals of this Presentation

By the end of this slide you should know:

- What the NCWM Safety Survey is and how your organization can participate in it
- How to calculate different types of incident rates for your organization and why these numbers are important
- What the results of the 2016 NCWM survey were so that you can compare your program to regional and national results
- How to assess, prioritize and mitigate safety hazards using this information



# 2016 NCWM Safety Survey

## Purpose of Survey:

- Help Weights & Measures programs assess risks in the work place

## Goals from data collected:

- Set safety priorities
- Set benchmarks to measure improvement

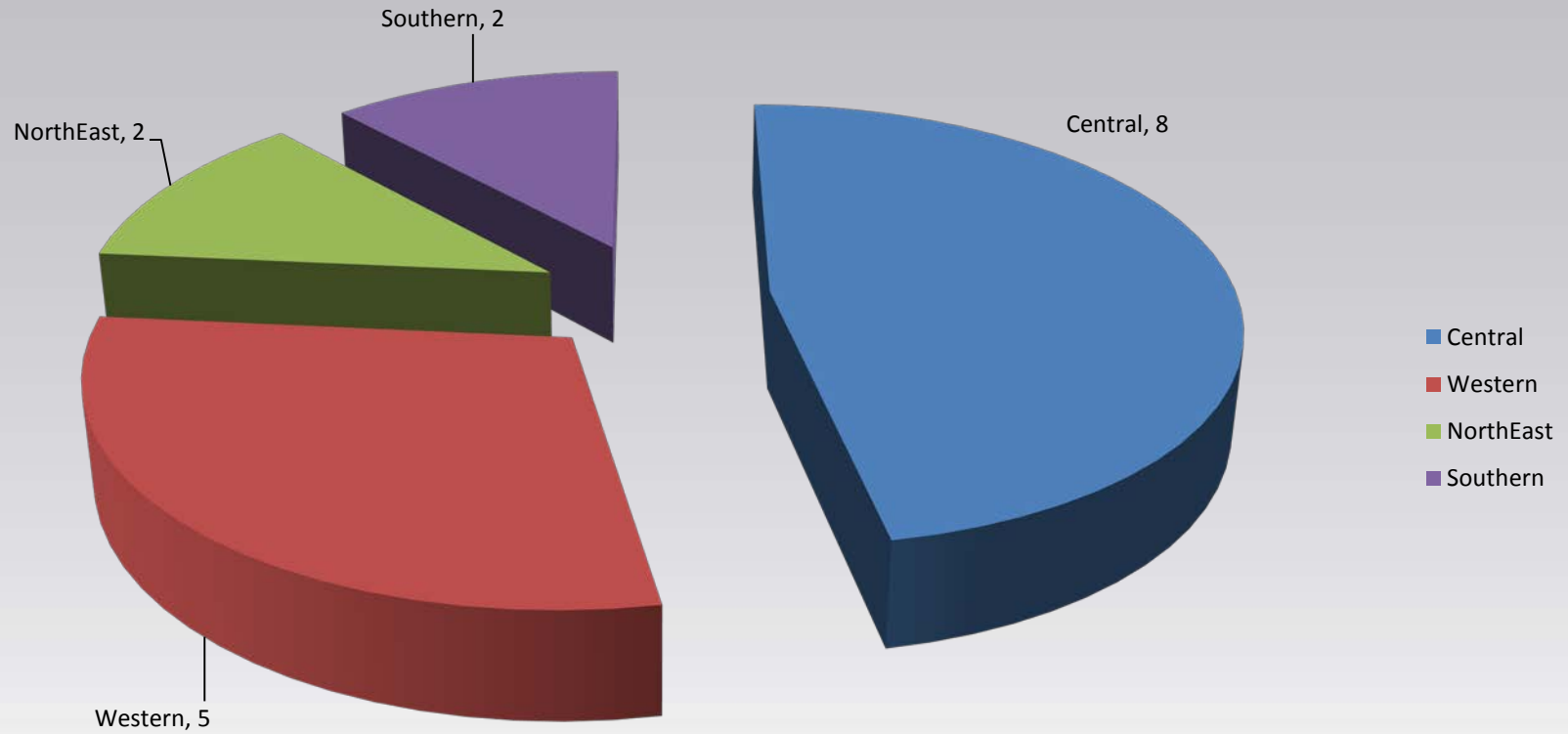
## Participation:

- 22 states responded
- 17 completed injury information



# Completed Surveys by Region

## Complete





# Info Needed for Survey

## How many FT employees in last calendar year

- Count FT and PT employees but calculate PTE to FTE

## How many hours employees actually worked

- Request this information from HR
- Do not include vacation/sick/holiday
- Approximate (Employees x 40 hours/week x 50 weeks) assuming 2 weeks off for each employee

## How many incidents that cost money, had Days Away, Restricted Time (DART)

- The Activities that led to DART injuries
- The Types of DART injuries



# Barrier to Completion

OSHA Forms 300 and 300A may combine with other agencies - making it difficult to parse out specific agency's data

## Possible solutions:

- Ask HR to provide data on specific agency
- Review OSHA form 300 and pick out incidents related to specific agency
- Keep own records, which allows the additional capture of non-reportable incidents



# Reportable vs Recordable

## Non-recordable incident: (nearmiss = still *reportable*)

- No cost in dollars on or after day of incident
- No cost in time after day of incident
- Example: employee falls; no injury; stays at work or goes home

## Recordable incident:

- Some cost in dollars or lost time
- Example: employee falls; hits head; sees a doctor on day of injury; returns to work next day

## Days Away/Restricted Time (DART) Incident:

- Injury or illness results in full day(s) away or work restrictions
- Example: employee falls, hits head, stays at work, sees doctor a week later for dizzy spells, misses 3 days and has a week when prohibited from driving.





# Calculating Injury Rates

**Allows organizations in the same field to compare safety - regardless of size**

OSHA formula equates to company with 100 people working 40 hours/week for 50 weeks/year

$$\text{IR} = \frac{\text{Number of OSHA Recordable Cases X 200,000}}{\text{Number of Employee labor hours worked}}$$



# Calculating Injury Rates

## Rate Calculation Example:

A company has 17 full-time employees and 3 part-time employees that each work 20 hours per week. This equates to 28,400 labor hours each year. If the company experienced 2 recordable injuries, then the formula works like this

$$\text{IR} = \frac{2 \times 200,000}{28,400}$$

$$\text{IR} = \frac{400,000}{28,400}$$

$$\text{IR} = 14.08$$



# Calculating Injury Rates

- **DART = Days Away/Restricted Time**
  - Measures incident rate for most expensive injuries
- **TRC = Total Recordable Cases = all recordable incidents including DART**
  - Includes minor injuries as well as major ones
- **Non-Recordables = Reportable Near-Misses = Reports of dangerous situations that ended without someone being hurt**
  - Free information to use before someone gets hurt
  - Companies with best practices collect and use this information



# Statistic

1 out of 10,000 unsafe actions results in hospitalization or death

- Will the hospitalization or death be the 10,000 time someone encounters a hazard or the first time?
- Every incident without an injury is an opportunity to address the hazard and prevent a future injury
- Must know about the incident in order to respond to the hazard



# Best Program Practices

- Reward employees for reporting near misses and unsafe conditions
- Don't encourage "sucking it up"
- Calculate injury rates to find out if the programs are managing incidents properly or just lucky no one as been hurt



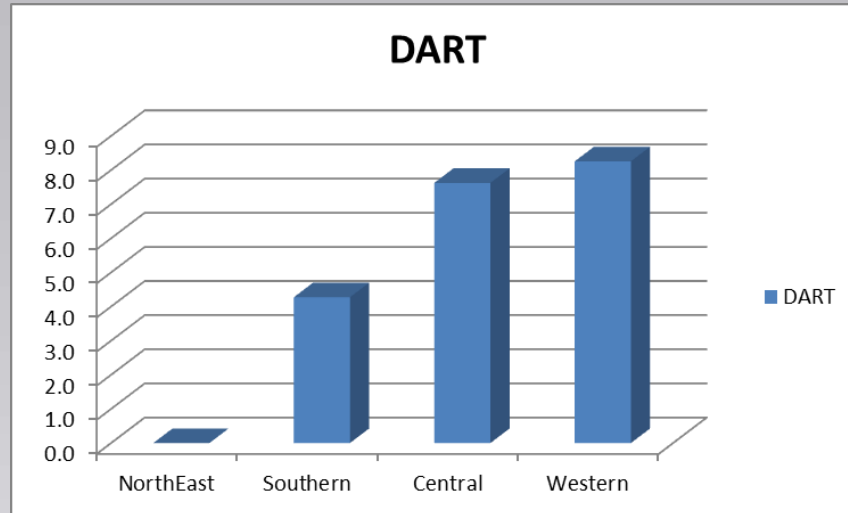
# Are You Good or Are You Lucky?



- Low non-recordables + Low recordables + High (or Low) DART = Poor safety culture relying on luck
- Low non-recordables + High recordables + Low DART = Lucky that nothing REALLY bad happened
- High non-recordables + Low recordables + Low DART = Good safety culture



# DART Results by Region



No.	Region	Employees	Hours	Lost	Restricted	LRT	Total	DART
2	NorthEast	222	155000.0	0	0	0	0	0.0
2	Southern	140	281020.0	5	0	1	6	4.3
8	Central	185	341089.1	7	1	5	13	7.6
5	Western	114	193822.5	3	2	3	8	8.3
17	Total	661	970931.6	15	3	9	27	5.6



# What Should Incident Rate Be?

- Minnesota Governor's Safety Award Criteria for Law Enforcement Agencies
  - TRC = Total Recordable Cases  $\leq 6.1$  for three consecutive years
  - DART = Days Away/Restricted Time  $\leq 3.3$  for three consecutive years
- For MN W&M (30 FTE) means one or fewer recordables and zero DART injuries per year
- NCWM can set own criteria once enough data collected





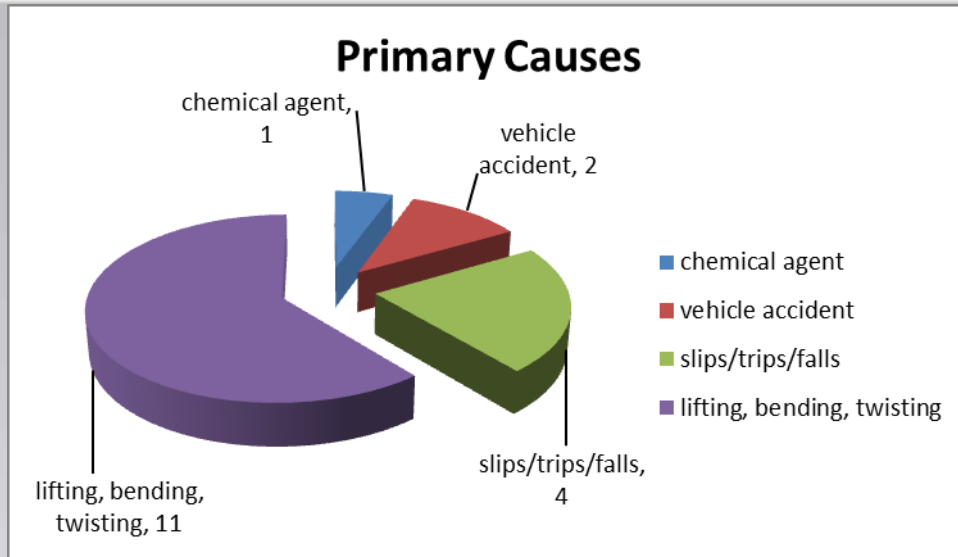
# Focus on the Causes

- Survey data proves even the smallest types of accidents can cause severe injuries
- Easier to prevent accidents than to control degree of injury once an accident happens





# Primary Causes of DART Injuries



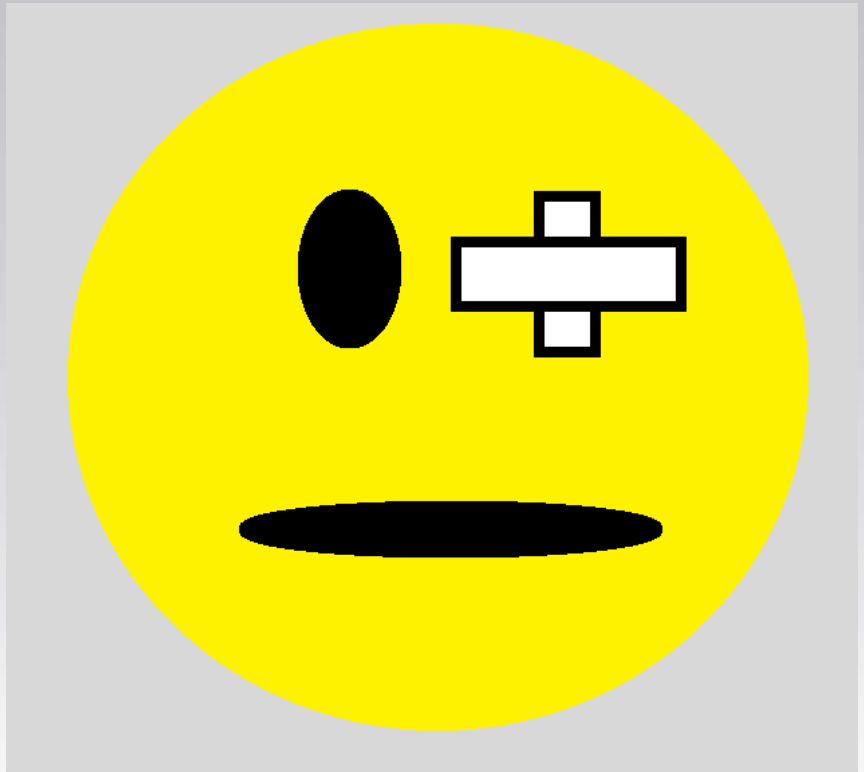
Cause	Central	Southern	Western	Total
chemical agent	0	1	0	1
vehicle accident	2	0	0	2
slips/trips/falls	1	1	2	4
lifting, bending, twisting	5	3	3	11
<b>Total</b>	<b>8</b>	<b>5</b>	<b>5</b>	<b>18</b>



# Impact – Chemical Agents

1 reported DART injury to an eye

- Less than one day lost
- No Restrictions

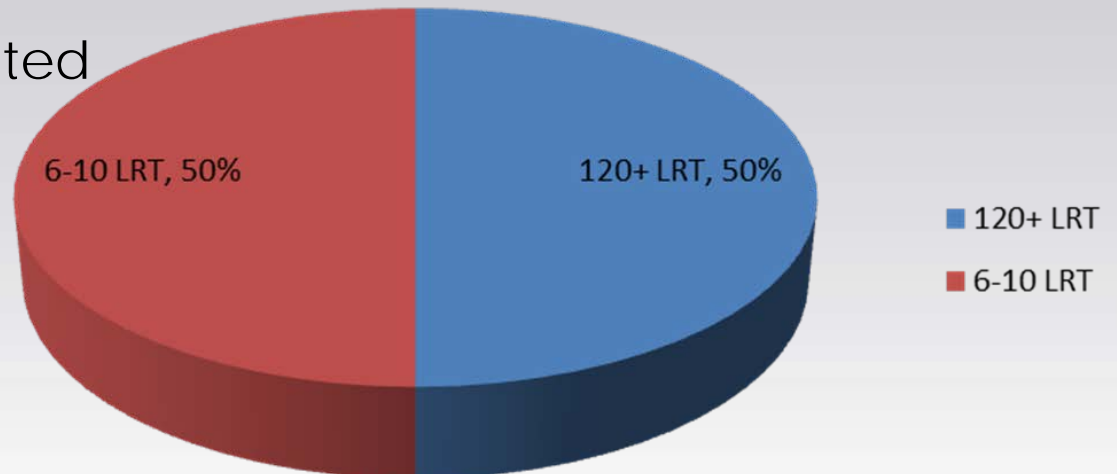




# Impact – Vehicle Accidents

## 2 reported DART vehicle accidents

- Rolled a 1 ton truck resulting in soft tissue injury
  - 6-10 days lost time
- No event description but resulted in back/neck injury
  - 60+ days lost
  - 60+ days restricted

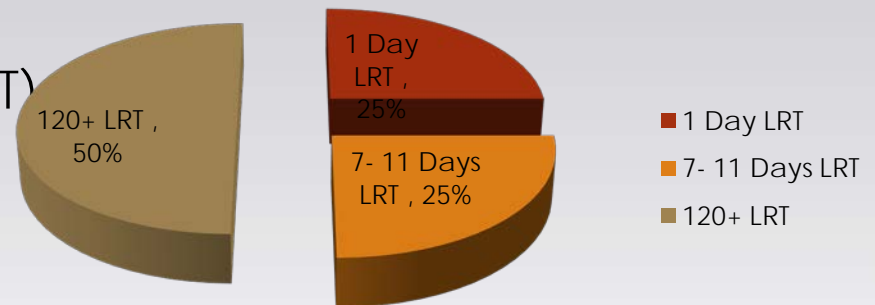




# Impact – Slips/Trips/Falls

## 4 reported DART slip/trip/fall accidents

- 1 back injury in metrology, standing on prover trailer when it tipped (7-11 DART)
- 1 broken ankle inspecting fuel pumps (120+ DART)
- 2 no event description
  - Soft tissue injury (1DART)
  - Broken bones (120+ DART)

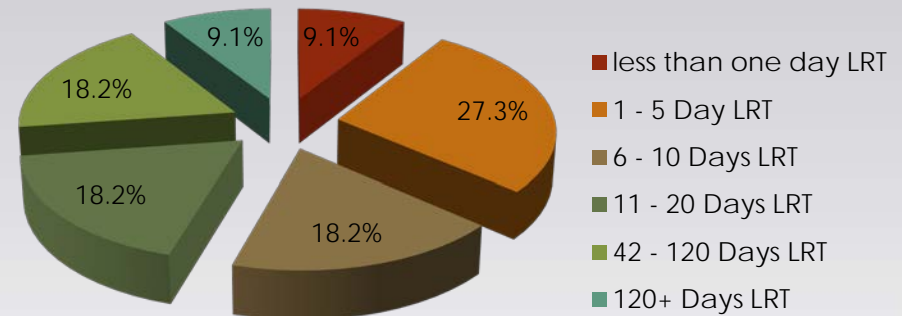




# Impact – Lifting/Bending/Twisting

## 11 reported DART lifting/bending/twisting accidents

- 5 involved lifting, loading or pushing weights
- 1 involved climbing onto a prover
- 1 less than a day
- 3 with 1-5 days
- 2 with 6-10 days
- 2 with 11-20 days
- 2 with 42-120 days
- 1 with 120+ days





# Create a Risk Assessment Grid

Likelihood x Severity = Risk Rating

- Use NIST training on risk assessment grids
- Include numbers from non-recordables (reportable near-misses)

Cause	Percent	% Most Lost Days	Most Lost Days	Rank
chemical agent	5.6%	100.0%	1	0.1
vehicle accident	11.1%	50.0%	120	6.7
lifting, bending, twisting	61.1%	9.1%	120	6.7
slips/trips/falls	22.2%	50.0%	120	13.3



# Special OSHA Standards - Rare But With Very High Risk

## Overhead Hoists and Cranes

- Includes hoists on trucks and in metrology labs

## Motorized Trucks

- Includes motorized pallet jacks and weight trucks for vehicle scale inspections

## Confined Space

- Includes scales pits unless they are designed for normal occupancy including air quality controls, climate controls, easy entrance and egress

## Chemical Hazard Communication

- Includes how to read labels and safety data sheets for safe handling, safe storage, clean-up, and first aid.





# Prioritize Based on Risk

Use data from NCWM

- <http://www.ncwm.net/resource/safety> has links to
  - NCWM Safety Survey Results
  - Past Safety Articles
  - OSHA guides and standards

Use data for your region

- Regional differences may emerge from survey data
  - Central had 5 of the 11 lifting/bending/twisting accidents

Calculate agency data

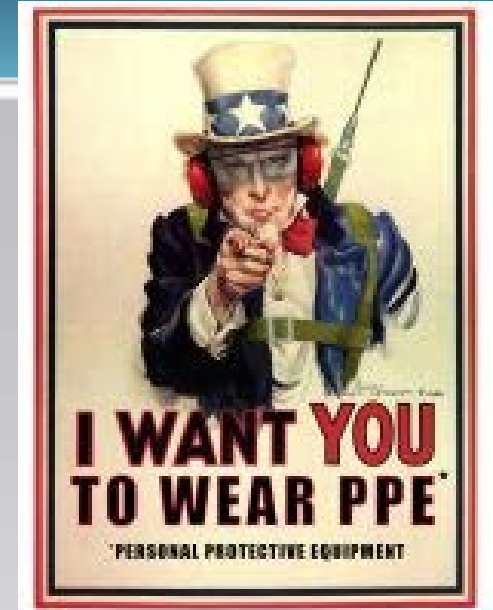
- Remember to include risks identified in non-recordable incidents!



# Address the Identified Hazards

## Hierarchy of Controls

- Eliminate (most effective)
- Engineer (most effective)
- Educate/Communicate
- PPE (less effective)
- Policies (least effective)



Communication determines success of PPE/Policies

PPE only works once an accident has happened and only if employees wear the PPE correctly

Policies only work if employees remember and follow the policies



# Take-Aways

## Participate in the survey annually

- The greater the participation, the more useful the data

## Calculate your incident rates and determine if your program is good or if it is lucky

- Calculate incident rates for non-recordables, recordables, and DART incidents –
- $(\# \text{incidents} \times 200,000) / \# \text{hours worked}$

## Assess risk for each identified hazard (Likelihood x Severity)

- Include NCWM Survey information when considering risks
- Remember to consider OSHA standards when assessing hazards

## Use knowledge gained to eliminate or mitigate safety hazards

- Allocate resources based on risk to address hazards
- Address causes to limit injuries



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Questions?