U.S. Department of Labor
Mine Safety and Health Administration

NATIONAL STONE, SAND & GRAVEL ASSOCIATION

Natural building blocks for quality of life

MSHA/NSSGA Alliance – Injury and Illness Data Analysis Team[1] Meeting Statement of Work

June 25 – 27, 2003

Mission:

Examine MSHA's injury and illness database for the aggregate industry to identify what interventions will have a positive impact on the health and safety of miners.

Scope (CY 2000-2002):

1. Identify the type of activities that result in the most injuries or illnesses

2. Identify the type of activities that most frequently result in injuries or illnesses with a consideration for the severity of the injuries

3. A total of 12,147 injuries, which included 67 fatalities and 129 permanent total or partial disabilities, were analyzed for SIC codes 142200; 142201; 142300; 142900; 142901; 142902; 142903; 142904; 142905; 142906; 144100; 144200; and 145906 (crushed stone, sand and gravel, and shale).

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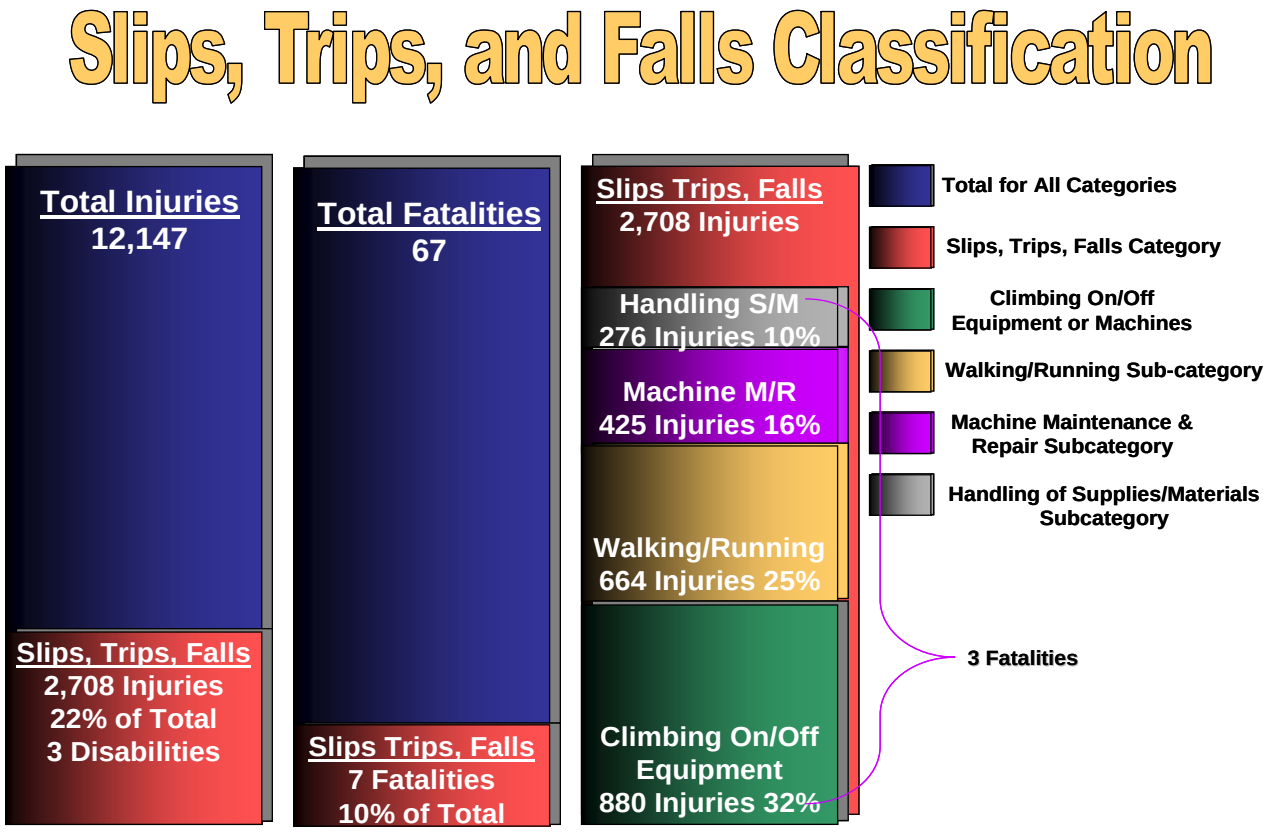
MSHA Team members: Kevin Burns (Co-Chairperson); Joseph Denk; Michael Hancher; Donald Kirkwood; and Lana Lawless

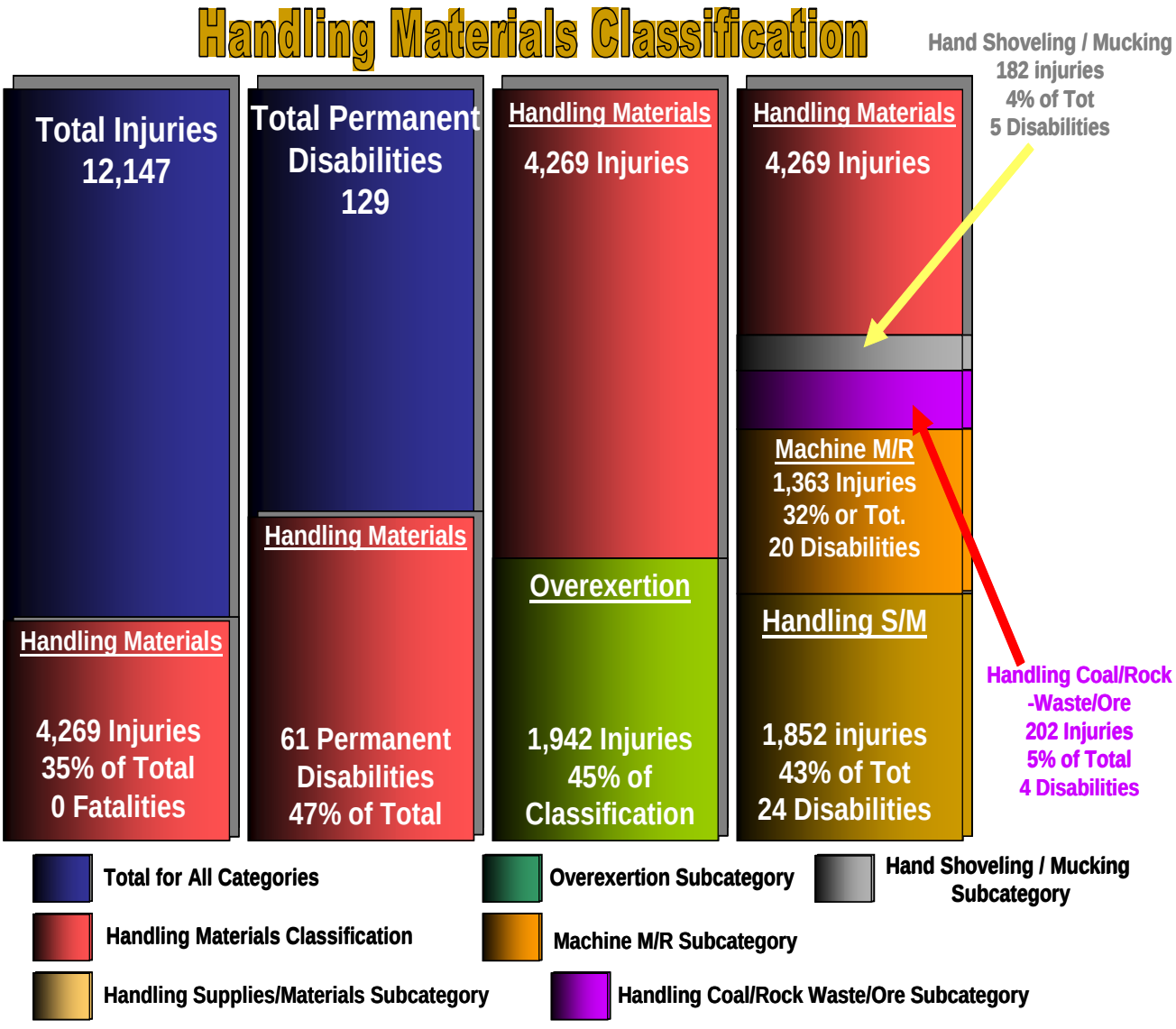
The team reviewed and analyzed injury and illness data for all activities by degree and number of injuries and found the following:

Findings:

1. The accident classification of slips, trips and falls accounted for 2,708 injuries (22 % of the total), 7 fatalities (10 % of the total) and 3 permanent disabilities. In this accident classification the following activities accounted for most of the injuries: climbing on/off equipment or machines accounted for 880 injuries (32%); walking/running accounted for 664 injuries (25%); machine maintenance/repair accounted for 425 injuries (16%) and handling supplies/materials accounted for 276 injuries (10%). In addition, these four activities accounted for 3 fatalities.

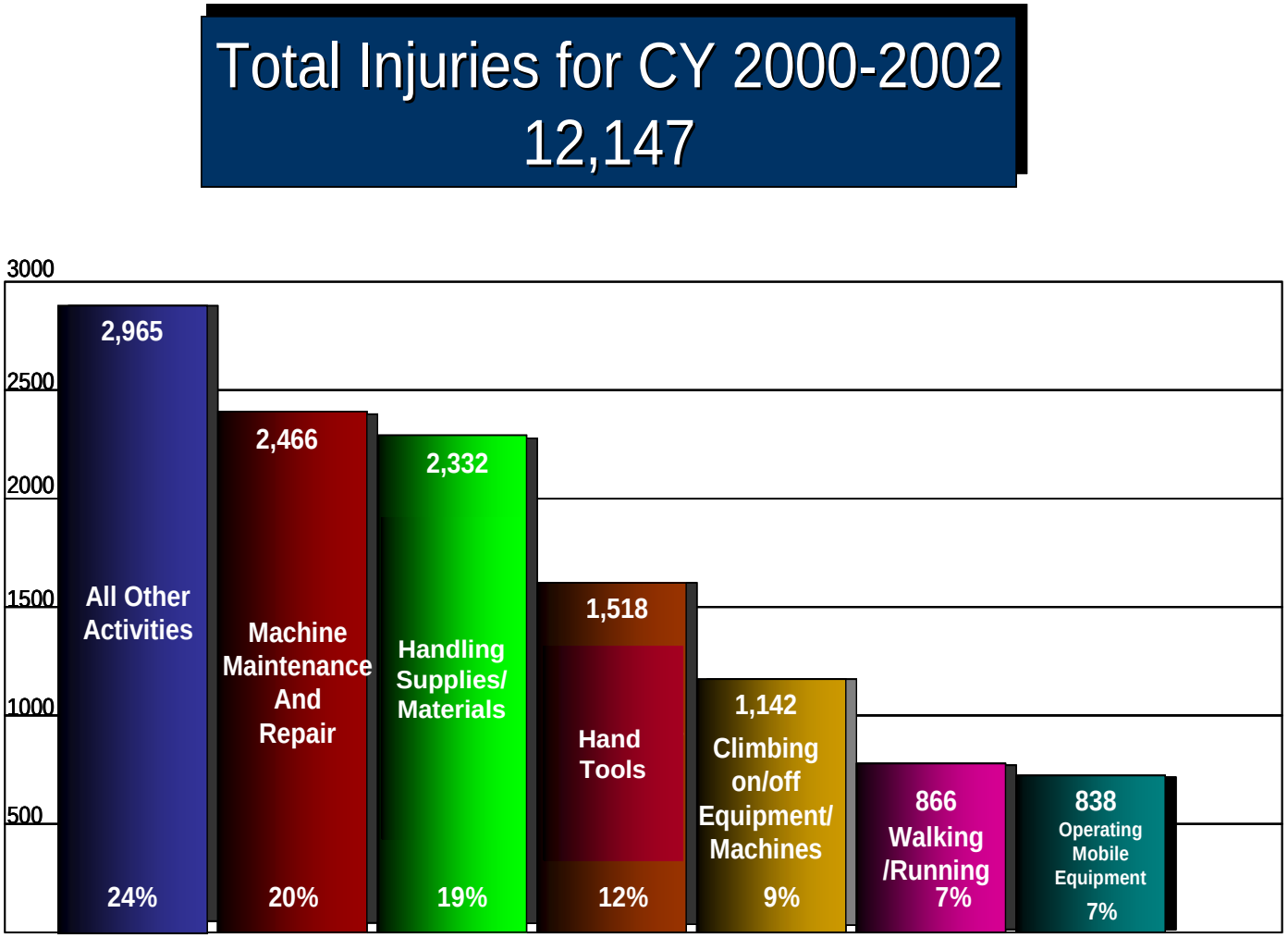


2. The accident classification of handling materials accounted for 4,269 injuries (35% of the total), no fatalities and 61 permanent disabilities (47% of the total). Overexertion was involved in 1,942 these injuries (45%). In this accident classification the following activities accounted for most of the injuries: handling supplies/materials accounted for 1,852 injuries (43% and 24 permanent disabilities); machine maintenance & repair accounted for 1,363 injuries (32% and 20 permanent disabilities); handling coal/rock waste/ore accounted for 202 injuries (5% and 4 permanent disabilities); hand shoveling/mucking accounted for 182 injuries (4% and 5 permanent disabilities).



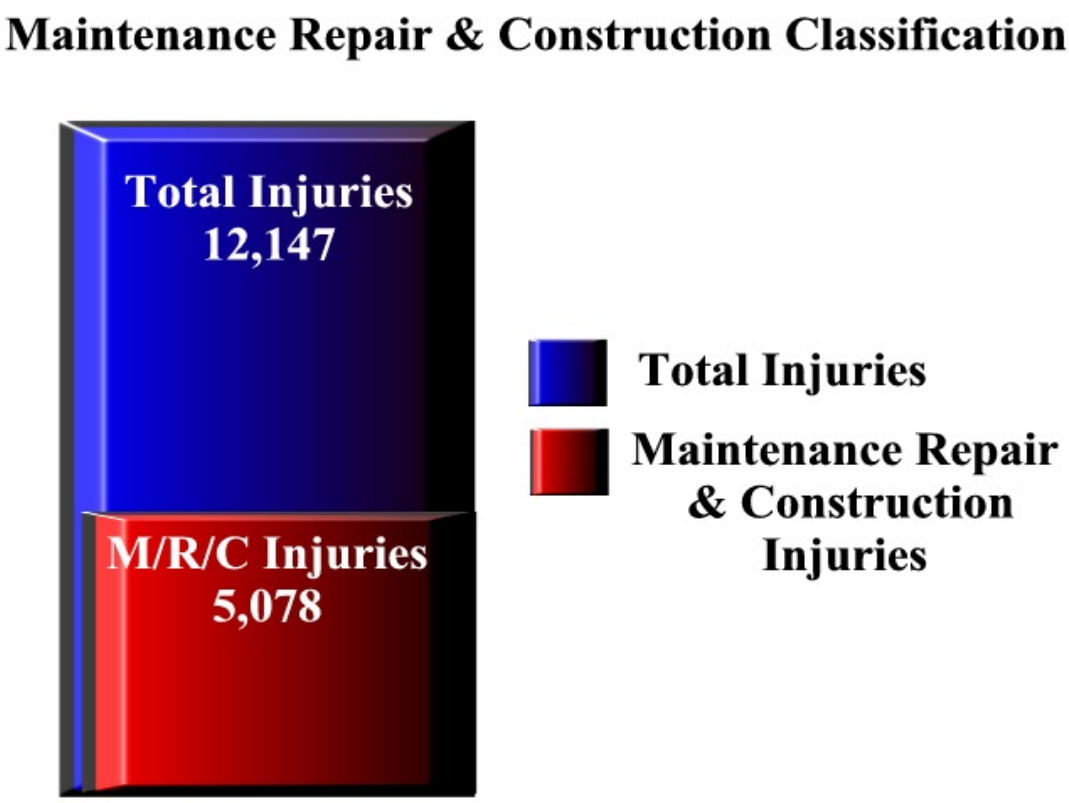
3. Selected six activities accounting for the largest percentage (76%) of injuries.
    a. Machine Maintenance/Repair (20%)
    b. Handling Supplies/Materials (19%)
    c. Hand Tools (Not Powered) (12%)
    d. Climbing on/Off Equipment/Machines (9%)
    e. Walking/Running (7%)
    f. Operating Mobile Equipment (7%)

    Note: Due to rounding, the total does not equal exactly 76%,

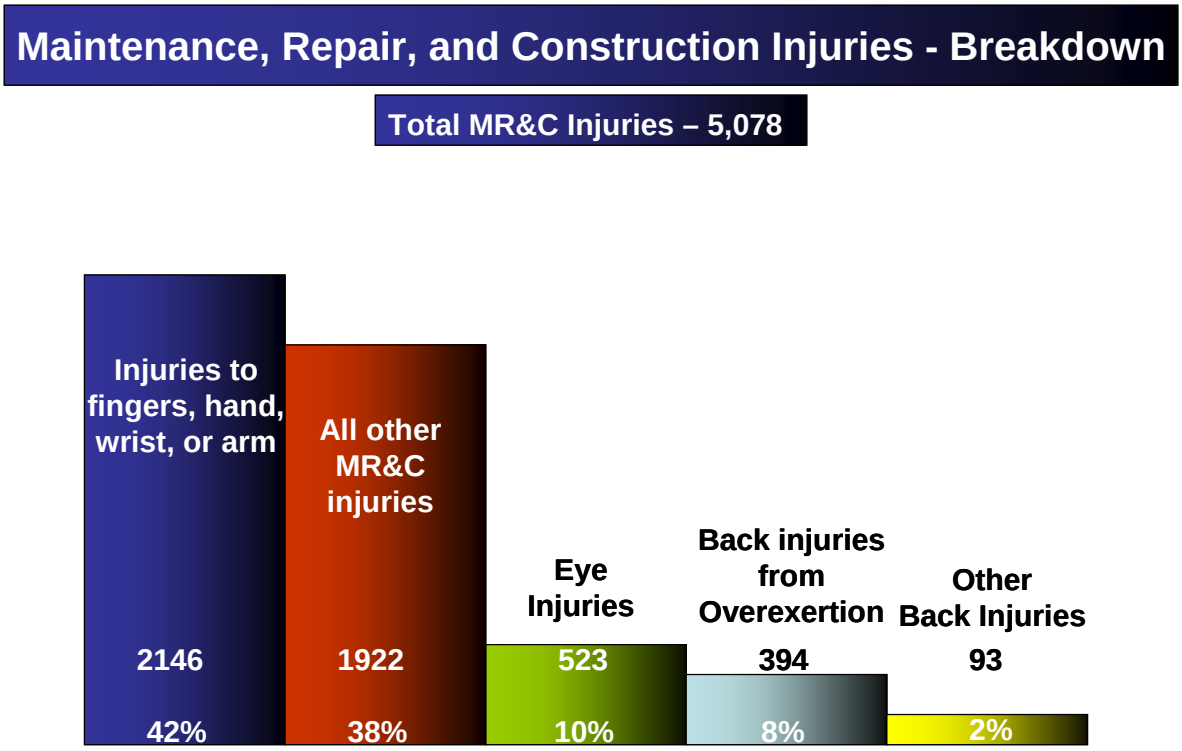


Note: Due to rounding, the total does not equal 100%

4. Combined Machine Maintenance/Repair with 10 additional activities to create a broader category, which was called "Maintenance, Repair and Construction." There were 5,078 injuries within this category, which represents 42% of the total injuries reviewed. The 11 subcategories in this category includes:
    a. Machine Maintenance/Repair
    b. Hand Tools (not powered)
    c. Surface Construction NEC
    d. Welding and Cutting Elect/Acetyl
    e. Hand Tools (powered)
    f. Moving Equipment (Fans/Pumps/etc.)
    g. Grinding Bits/Steel/Welds
    h. Electrical Maintenance/Repair
    i. Operate Hoist
    j. Working with Chemicals
    k. Working with Noxious Materials



5. Of the 5,078 injuries in the Maintenance, Repair and Construction category, 2,146 involved injuries to the fingers, hand, wrist, or arm. Eye injuries accounted for 523 of these injuries. Back injuries accounted for 487 of these injuries (394 of the back injuries were caused by overexertion).

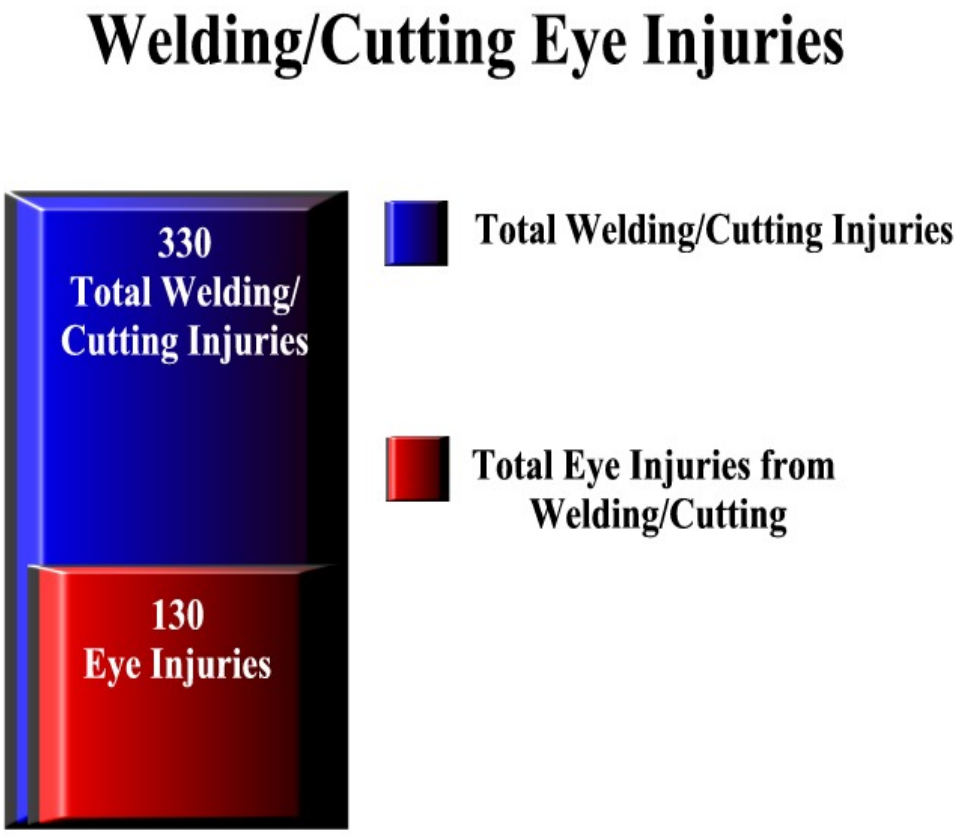


6. The team analyzed maintenance, repair and construction by Accident Type and Classification.

7. In the Struck-by accident type categories, the Struck-by NEC accounted for 1,443 accidents or 28% of the 5078 accidents in the Maintenance, Repair and Construction category. Further analysis revealed that hand tools accounted for the majority of occurrences. Accidents involving knives, wrenches, hammers/axes, and crowbars were the largest contributors in this category, however, the severity of injuries was low.

8. It was identified that 30 of 35 Degree 2 (permanently disabling) injuries under Machine Maintenance/Repair were amputations. Most involved the fingers, which were largely attributable to lock out/tag out issues and struck-by events.

9. Welding/Cutting accounted for 330 injuries in maintenance, repair and construction and eye injuries accounted for 130 of these injuries. Narratives indicated improper PPE (proper eye protection), lack of the use of PPE, and inadequate protection for other employees in the area were factors in most of these injuries.



10. There were 329 powered hand tool accidents. Grinders accounted for 151 of these accidents and resulted in 95 eye injuries. Powered hand tools were involved in 127 eye injuries. Hands and fingers were injured in 90 powered hand tool incidents. There were no fatalities related to the use of powered hand tools and only 4 resulted in permanent disabilities. Of the 329 hand tool injuries, 135 resulted in restricted duty or days away from work.

11. There were 314 injuries involving conveyors (88 fingers; 35 hands; and 23 arms) and 252 involving crushers. Front-end loaders accounted for 230 injuries. "No value found" was entered in the type of equipment listing for 1,138 injury cases.

12. The team found that the data indicates that some types of incidences result in a high frequency of less serious injuries. These include eye injuries and cuts to the fingers, hands and arms. These types of incidences seem to be the most preventable by making sure that miners have the knowledge and skills to safely and properly use hand tools (knives, hammers and wrenches) and through the proper use of PPE (gloves, safety glasses, etc.). A reduction in the number of these incidences will have a significant impact on the total incidence rate. Although, data shows that these incidences do not result in fatal injuries, the industry has been experiencing a disproportionate number of maintenance related fatalities. Interventions and an increased awareness to prevent these maintenance related incidences may have a positive impact on the fatal incidence rate.

13. The team queried the data for occupational illnesses (degree 7) in the aggregates industry and found a total of 300 cases. Of these, 32 were illnesses of the lungs. No further analysis was performed, due to time constraints.

Recommendations:

1. The team found that a high number of injuries were occurring during maintenance repair and construction activity with crushers, conveyors and front end loaders. It is recommended that further analysis be conducted to identify the trends in types of accidents, specific work activities being performed on this equipment as well as occupation and experience of the injured employees. The goal will be to identify areas that the Alliance should focus on to bring about improvement in safety and health performance. In the interim, the team recommends that all maintenance jobs be analyzed for potential hazards, planned and properly supervised to identify the best safety practices to prevent accidents, injuries, and fatalities.

2. The team should analyze the data for injuries involving the operation of mobile equipment to identify trends with respect to operator experience, training, equipment age and condition, types of accidents and specific operator tasks involved.

3. Several other activities were identified as contributing significantly to injuries in the aggregate industry and should be analyzed more thoroughly to identify trends and develop intervention strategies. These include: handling supplies and materials; climbing on and off of equipment and machines, and walking and running.

4. The team should analyze MSHA's violation history data for the aggregate industry to identify trends and areas where improvement is needed and to determine if existing compliance efforts are focused on the issues that can make a difference in achieving safer and healthier workplaces.

5. The MSHA/NSSGA Alliance should work together to identify the critical tasks, jobs and work activities that are involved in accidents and health risks. The alliance should establish teams to analyze these jobs to identify the knowledge, skills, information, procedures and tools that are needed to perform them correctly and should design effective training programs and intervention strategies.

6. The Alliance should emphasize the importance of "Preventing All Accidents". While it is not acceptable to have fatalities, there needs to be more focus on preventing all injuries. The Alliance should identify and focus on what is causing the most serious accidents but also recognize that dramatic improvements can be made in injury prevention by paying more attention to proper use of hand tools (knives, hammers and wrenches) and the proper use of PPE (gloves, safety glasses, etc.).

7. The team should conduct further analysis of the occupational illness data to identify trends and prevention strategies.