U.S. Department of Labor

Office of Inspector General—Office of Audit

REPORT TO THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OSHA DOES NOT KNOW IF SPECIAL EMPHASIS PROGRAMS HAVE LONG-TERM INDUSTRYWIDE EFFECT

Date Issued: September 28, 2016
Report Number: 02-16-201-10-105

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BRIEFLY…

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WHY OIG CONDUCTED THE AUDIT

More than half of inspections conducted annually by the Occupational Safety and Health Administration (OSHA) and state occupational safety and health agencies are in special emphasis programs (SEP). Both national emphasis programs (NEP) and local emphasis programs (LEP) are used to direct enforcement resources toward high-hazard industries or occupations that pose greater risks of death or severe injury/illness.

This audit builds upon prior audit results that raised concerns about how OSHA targets high-hazard industries and how it determines the impact of its inspection programs. These prior audits found OSHA did not target some of the highest risk industries nationwide in its Site Specific Targeting program, could not demonstrate the impact of penalty reductions as an incentive for employers to improve workplace safety and health, and lacked evidence to demonstrate the effectiveness of occupational safety and health programs administered by states.

WHAT OIG DID

We conducted this performance audit to determine the following:

> Can OSHA demonstrate whether SEPs are effective in improving safety and health conditions for workers in high-hazard industries and occupations?

READ THE FULL REPORT

To view the report, including the scope, methodology, and full agency response, go to: http://www.oig.dol.gov/public/reports/oa/2016/02-16-201-10-105.pdf

WHAT OIG FOUND

OSHA could not demonstrate whether its SEPs were effective in improving safety and health conditions for workers in high-hazard industries and occupations. Its performance measurement strategy lacked outcome metrics related to reducing the rate of injuries, illnesses, and fatalities, lessening levels of exposure to health risks, and/or decreasing the frequency of catastrophic events.

OSHA's SEP reviews typically reported results that reflected the one-time correction of hazards identified during individual inspections. For example, 83 percent of OSHA's reviews of federal OSHA LEPs used only inspection statistics to support conclusions on whether programs were effective and should be continued. However, determining that a previously cited hazard had been corrected is not an indicator that the hazard is being addressed throughout the industry.

In addition, for NEPs, OSHA did not have a documented risk assessment methodology for building a risk model each year that captured emerging trends and the latest data regarding high-hazard industries and occupations. OSHA did not develop guidelines to formally weigh all available information on hazards, identify the industries and occupations with the highest level of hazard risk, and then proactively develop and utilize NEPs for those industries and occupations.

Our analysis of data from three major sources of information referenced in NEP directives showed NEPs did not target some high-hazard industries. With neither outcome-based performance metrics nor a documented risk assessment methodology, OSHA could not demonstrate its SEPs focused enforcement resources on the most hazardous industries and occupations posing the greatest risk of death or severe injury/illness to U.S. workers.

WHAT OIG RECOMMENDED

We recommend the Assistant Secretary for Occupational Safety and Health establish and use outcome-based performance metrics for all SEPs, and a documented risk assessment methodology for identifying high-hazard industries and occupations. OSHA commented on a number of the findings and recommendations, but nothing in its response changed our report.

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Office of Inspector General
Washington, D.C. 20210

September 28, 2016

INSPECTOR GENERAL'S REPORT

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The Occupational Safety and Health Administration (OSHA) uses special emphasis programs (SEP) to direct enforcement resources toward high-hazard industries or occupations posing the greatest risk of death or severe injury/illness to workers. According to OSHA, SEPs mitigate risks to workers in high-hazard industries and occupations through inspections and outreach activities. On average, OSHA and states[1] conduct approximately 50,000 SEP inspections per year through National Emphasis Programs (NEP) and Local Emphasis Programs (LEP).

The Office of Inspector General (OIG) conducted this audit to build upon prior OSHA audit results that found OSHA had not adequately targeted high-hazard industries or determined the impact of its inspection programs. Specifically, these audits found OSHA had not targeted some of the highest risk industries nationwide in its Site Specific Targeting program, could not demonstrate the impact of penalty reductions as an incentive for employers to improve workplace safety and health, and had not examined the impact of state programs to ensure they were at least as effective as federal programs.

Our audit objective was to determine the following:

> Can OSHA demonstrate whether SEPs are effective in improving safety and health conditions for workers in high-hazard industries and occupations?

[1] "States" refers to 25 states and 2 territories that, during Fiscal Years (FY) 2011-2013, operated OSHA-approved occupational safety and health plans, authorized under Section 18 of the *Occupational Safety and Health Act of 1970*.

RESULTS IN BRIEF

OSHA did not have a performance measurement strategy with outcome-based metrics in place to demonstrate whether it developed and used SEPs to improve safety and health conditions in high-hazard industries and occupations by reducing the rate of injuries, illnesses and fatalities, lessening levels of exposure for health risks, and/or reducing the frequency of catastrophic events. OSHA's SEP reviews typically reported output statistics related to the one-time correction of hazards identified during specific inspections, but did not demonstrate any long-term impact on safety and health conditions or hazard prevention in the targeted industry. As stated in prior Government Accountability Office (GAO) and OIG reports, inspection statistics are useful for monitoring OSHA and state activities, but are not designed to provide the outcome-oriented information needed to show program effectiveness in reducing risks to workers. As a result, OSHA management lacked key information for determining whether SEPs achieved the desired result of improving safety and health conditions in high-hazard industries and occupations.

Additionally, OSHA did not have a documented risk assessment methodology to ensure its NEPs proactively and consistently focused on high-hazard industries and occupations. NEPs were developed and modified based on emerging issues or hazard information from many sources. However, OSHA did not develop guidelines to formally weigh all available information on hazards, identify the industries and occupations with the highest level of hazard risk, and then proactively develop and utilize NEPs for the highest hazard industries and occupations. With neither performance metrics nor a documented risk assessment methodology, OSHA could not demonstrate that it focused enforcement resources on the most hazardous industries and occupations posing the greatest risk of death or severe injury/illness to U.S. workers.

BACKGROUND

Since Fiscal Year (FY) 2013, OSHA's Congressional Budget Justifications have described SEPs as targeting strategies used to aid in focusing enforcement resources on the most hazardous worksites with the goal of reducing workplace injuries, illnesses, and fatalities.

OSHA's Field Operations Manual, Chapter VI, Part D, states:

> Special Emphasis Programs provide for programmed inspections of establishments in industries with potentially high injury or illness rates that are not covered by other programmed inspection scheduling systems or, if covered, where the potentially high injury or illness rates are not addressed to the extent considered adequate under the specific circumstances. SEPs are also based on potential exposure to health

hazards. Special emphasis programs may also be used to develop and implement alternative scheduling procedures or other departures from national procedures.

OSHA officials stated that OSHA and states develop SEPs to address emerging concerns for worker safety and health identified through research studies; trends in data for injuries, illnesses, fatalities, occupational exposures to health hazards; and investigations into the cause(s) of catastrophic events that killed or severely injured many workers. Table 1 presents SEP program and inspection numbers for FYs 2011-2013, grouped by NEPs, OSHA LEPs, and state LEPs.

Table 1 – SEP Programs and Inspections, FYs 2011-2013

Type of Program	# of Programs	# of Inspections
NEPs	12	41,591
OSHA LEPs	150	74,184
State LEPs	166	51,431
All SEPs	**328**	**151,451**[2]

Source: OSHA

For FYs 2011-2013, OSHA conducted 12 NEPs (Exhibit 1) to target nationwide the hazards of specific industries, such as petroleum refineries, or specific hazards across several industries, such as amputations. States implemented 72 percent of NEPs, covering 92 percent of the states' worksites in NEP-targeted industries (Exhibit 2).

RESULTS

OSHA did not have outcome-based performance metrics in place to demonstrate whether it developed and used SEPs to improve safety and health conditions in high-hazard industries and occupations by reducing the rate of injuries, illnesses and fatalities, lessening levels of exposure for health risks, and/or reducing the frequency of catastrophic events. In addition, OSHA did not have a documented risk assessment methodology to ensure SEPs were proactively developed and modified to address high-hazard industries and occupations.

[2] Total inspections (151,451) were less than the sum of inspections for the SEP programs because 15,755 inspections addressed both NEP and LEP targeted hazards/conditions and were counted twice.

OSHA LACKED OUTCOME-BASED PERFORMANCE METRICS FOR ITS SPECIAL EMPHASIS PROGRAMS

While most SEPs had goals to improve safety and health conditions in targeted industries, OSHA did not have outcome-based performance metrics to assess whether the SEPs were achieving those goals. Office of Management and Budget (OMB) Circular A-11, *Preparation, Submission, and Execution of the Budget*, Part 6, requires agencies to manage program performance using goals, measurement, evaluation, analysis, and data-driven reviews to improve results, effectiveness and efficiency.

OSHA's SEP studies and reviews typically reported inspection statistics related to the one-time correction of hazards identified during specific inspections, but did not demonstrate whether the programs had any long-term impact on safety and health conditions in the targeted industries or occupations. Prior GAO and OIG reports have concluded that inspection statistics are useful for monitoring OSHA and state activities, but are not designed to provide the outcome-oriented information needed to show program effectiveness in reducing risks to workers.

In the report *Further Steps by OSHA Would Enhance Monitoring of Enforcement and Effectiveness,* (GAO-13-61, January 24, 2013), GAO reported:

> OSHA collects information on activities…but officials said they do not evaluate these data to determine whether these programs were responsible for desired outcomes in regions and across states. In our previous work, we have emphasized the need for evaluative information to help decision makers determine whether, and why, a program is working well…. [T]here is a recurring lack of planning at OSHA for post-initiative evaluation, which hinders the agency's ability to determine whether its enforcement efforts, including NEPs, have an impact on outcomes, such as reducing occupational injuries.

The GPRA Modernization Act of 2010, Section 1116(f), requires a review of the performance goals and objectives of each federal agency to be conducted on an annual basis. Using the agency Strategic Plan, agency leaders assess progress on mission, management, and crosscutting strategic objectives. The assessment considers performance goals and other indicators the agency tracks for each strategic objective, as well as challenges, risks, external factors, and other events that may have affected the outcomes. The strategic review serves as an annual assessment of progress being made to improve program outcomes, assess whether the agency is using the best measures to identify progress on program outcomes. For both FY 2014 and FY 2015, DOL ranked OSHA's efforts as demonstrating "Noteworthy Progress."

However, our audit results demonstrate OSHA lacked a comprehensive measurement strategy given that OSHA's performance metrics focused on outputs. Without outcome-based performance metrics, OSHA management lacked key information for

determining whether SEPs achieved the desired result of improving safety and health conditions in high-hazard industries and occupations. Specifically:

- From FYs 2011-2013, OSHA primarily used output inspection statistics to assess 10 of its 12 NEPs, but did not assess the long-term impact of those programs on worker safety and health in targeted industries and for targeted hazards.[3]

- For FY 2013, OSHA's performance reviews reported outcome-oriented information for 24 of 150 LEPs operated by federal OSHA programs, but OSHA did not use the information to assess the long-term impact on targeted hazards and health conditions.

- OSHA did not require state occupational safety and health programs to provide performance reviews of individual LEPS.

OSHA officials stated a new final rule, which takes effect January 1, 2017, will improve OSHA's ability to monitor changes in injury and illness rates for SEP-targeted industries since certain employers will be required annually to electronically submit establishment-level data from OSHA injury and illness tracking forms.

OSHA PRIMARILY USED INSPECTION STATISTICS IN ITS ASSESSMENTS OF NEPs

From FY 2011 to FY 2013, OSHA conducted a study of the Amputations NEP. The study results were based primarily on inspection statistics and OSHA did not assess the long-term impact on targeted hazards and heath conditions. OMB Circular A-11 requires agencies to manage program performance using goals, measurement, evaluation, analysis, and data-driven reviews to improve results, effectiveness, and efficiency. However, OSHA generally relied on monitoring reviews of inspection data, which did not provide the outcome-oriented information needed to show program effectiveness in reducing risks to workers. This occurred because OSHA, according to its officials, did not have the resources or data to conduct comprehensive studies for all programs, or evaluations with strong evidence linking inspections to changes in injuries and illnesses rates. As a result, OSHA management lacked key information for determining whether its NEPs achieved their goals and had any long-term impact on safety and health conditions.

OSHA officials stated many inspection metrics were "outcomes" in the sense that they showed whether a program was successfully targeting the worksites with hazards. Since OSHA inspects about one percent of worksites in a targeted industry, it cannot

[3] Recordkeeping NEP, which expired in FY 2012, was assessed in November 2013 to provide information on the accuracy of employer occupational injury and illness records and reports. The NEP was not included in the audit because it did not have a goal directly related to improving working conditions in high-hazard industries and occupations.

demonstrate using inspection metrics that the emphasis programs are successful in having a long-term impact on safety and health conditions throughout targeted industries or occupations as a whole.

STUDY OF AMPUTATIONS NEP DID NOT DEMONSTRATE LONG-TERM IMPACT

Although OSHA's study of the Amputations NEP for FYs 2007 to 2010 used both inspection results and outcome-oriented information showing a decrease in amputations, the study did not determine if there was a causal relationship between inspection activities and reductions in amputations.

OSHA Instruction, *National Emphasis Program on Amputations*, Directive Number CPL 03-00-003, effective October 27, 2006, states the NEP should "reduce workplace machine and equipment hazards which are causing or likely to cause amputations."

OSHA's study summarized 4 years of federal and state inspection data for 40 targeted industries and 5 focused standards OSHA termed as "generally recognized as being related to amputation hazards." OSHA concluded the targeting criteria for the Amputation NEP was effective because 67 percent of inspections found violations in at least 1 of the 5 focused standards.

For outcome-oriented information, the study also presented 9 years (2003-2011) of Bureau of Labor Statistics (BLS) data on the frequency of amputations in the targeted industries. The study reported from Calendar Year (CY) 2006 to 2010, the amputation rate decreased by 26 percent, but presented no evidence demonstrating a correlation between the reduction in amputations and the NEP. OSHA officials disagreed and stated the agency believed the study showed a correlation between the decline in amputation risk and the introduction of the Amputations NEP. While both BLS and NEP data were presented, the study did not demonstrate a correlation because the data were too dissimilar with respect to time periods and scope.[4]

MONITORING REVIEWS OF NEP INSPECTION DATA WERE NOT CONSISTENT AND DID NOT DEMONSTRATE THE LONG-TERM IMPACT ON TARGETED HAZARDS

OSHA reviewed nine NEPs, but the review summaries did not provide consistent information for all NEPs or demonstrate the long-term impact on targeted hazards. All nine review summaries used inspection information, but only one included both OSHA and state inspections, while three included federal OSHA inspections only. Five summaries did not identify the scope of the reviews. Three summaries included

[4] BLS data for CY 2003 through 2011 presented national averages for 50 states. NEP data for FYs 2007 through 2010 presented inspection statistics for OSHA, plus the 15 states and 1 territory that implemented the NEP, or a total of 44 states and 5 territories.

outcome-oriented information, but the information did not demonstrate the long-term impact of the NEPs on the targeted hazards.

OSHA's reviews did not provide consistent information regarding the following:

- review period;
- state inspections;
- separate statistics for programmed and unprogrammed inspections; and
- most frequently cited standards and correlation to the targeted hazard(s).

According to OSHA officials, the agency has a monitoring process to continuously review NEP inspection data and make changes, as appropriate. Officials further stated OSHA reported on NEPs when requested and for outreach presentations, but not on a routine basis.

However, the reviews would be more precise if they were performed routinely and consistently, rather than sporadically.[5] Additionally, the NEPs have some similar characteristics (e.g., targeted industries, cited standards, process safety management) that would allow OSHA to perform cross-program analyses to identify best practices or areas for improvement. For example, OSHA's 12 NEPs targeted a total of 434 industries. Of those 434 industries, 152 (35 percent) were included in 2 or more NEPs.

While three reviews included outcome-oriented information, the information did not demonstrate the long-term impact on the targeted hazards. For example, the purpose of the Primary Metal Industries NEP was to identify and reduce worker exposure to harmful chemicals and health hazards. The NEP directive required an assessment using data on exposures from inspection and follow-up site visit reports to determine the program's impact on exposure levels at each worksite. However, the monitoring review did not discuss exposure levels at the inspected worksites. Instead, for the 4-year monitoring review (FYs 2011-2014), OSHA presented inspection statistics for 7 years (FYs 2008-2014) and outcome-oriented BLS *Number of Recordable Cases per 100 Workers* for 11 years (CYs 2002-2012). OSHA's review stated the BLS rates dropped significantly before the NEP was implemented and then stabilized "possibly due to the industries own efforts and reinforced by OSHA's NEP." But OSHA's review did not provide evidence linking OSHA's efforts under the NEP with the reduction in BLS rates. Therefore, OSHA management lacked key information for determining whether the Primary Metal Industries NEP inspections effectively reduced worker exposure to harmful chemicals and health hazards.

[5] Federal Internal Control Standards, paragraph 10.11, GAO-14-704G

ASSESSMENT OF FEDERAL OSHA LEPs DID NOT ADDRESS LONG-TERM IMPACT

While OSHA generally assessed the federal LEPs, it used inspection statistics to assess 94 percent of its programs, but used outcome-oriented information for only 16 percent.[6] OSHA's LEP policy allowed area and regional offices to select from a list of measures to support their conclusion about whether or not the program achieved its intended purpose and should be continued. However, the policy did not require the use of outcome-oriented information or the assessment of the long-term impact on targeted industries and hazards.

Consistent with OSHA policy, area and regional offices determined 124 of the 150 LEPs (83 percent) were effective and should be continued. In 102 LEPs that they determined to be effective, area and regional offices relied on inspection statistics alone and did not analyze outcome-oriented information. Moreover, the reports that did have outcome-oriented information did not demonstrate the impact of the programs on targeted hazards and health conditions in the industries or occupations. As a result, OSHA management lacked key information for determining whether the LEPs had any long-term impact on safety and health conditions.

Per OSHA policy CPL 04-00-001, *Procedures for Approval of Local Emphasis Programs (LEPs)*, programs were to cover priority hazards and/or industries as defined in the agency's Strategic Plan unless specifically authorized by the Regional Administrator. The policy provided a list of measures and required an assessment which must address the program's role in meeting the following goals of the Strategic Plan:

- Secure safe and healthy workplaces, particularly in high-risk industries.
- Improve workplace safety and health through the enforcement of occupational safety and health regulations and standards.

For FY 2013, OSHA reviewed its 150 LEPs using primarily output inspection statistics, such as number of inspections (141, or 94 percent) and limited outcome-oriented information, such as impact on fatalities (23, or 15 percent) or injury and illness rates (5, or 3 percent). Overall, 24 of 150 LEPs (16 percent) were assessed using outcome-oriented information.[7] Table 2 below summarizes the frequency of measures used in LEP performance reviews.

[6] Out of 150 federal OSHA LEPs, 118 were assessed using only inspection statistics, 23 used a combination of inspection statistics with injury and illness rates and/or fatality rates, and 1 used the fatality rate, but not inspection statistics. Therefore, 141 (118 + 23), or 94 percent, used inspection statistics and 24 (23 + 1), or 16 percent, used injury and illness and/or fatality rates.

[7] Of the 24 LEPs assessed using outcome-oriented information, 19 used fatality rates, 4 used fatality and injury and illness rates, and 1 used injury and illness rates. Therefore, 23 used fatality rates and 5 used injury and illness rates as shown in Table 2.

Table 2 – Measures Used in LEP Performance Reviews

Measures	Frequency	Rate of Use
Inspection statistics (output)	141	94%
Fatality rates (outcome)	23	15%
Outreach activities (output)	12	8%
Injury and illness rates (outcome)	5	3%
Other data or studies (i.e., claims, etc.)	2	1%

Source: OSHA LEP performance reviews for FY 2013

While OSHA reviewed 16 percent of LEPs using outcome-oriented measures of fatality, injury, and illness rates, there was insufficient information for OSHA to assess the impact of the programs on targeted hazards and health conditions in the industries or occupations. First, the outcome information was reported as statistics for a specific year or two without trending over several years to demonstrate the long-term impact on targeted hazards and health conditions in the industry. Second, the information could not be validated because the source of the data was not consistently identified. For example, OSHA did not identify whether fatality information was based on data it received from BLS or data from employers. Third, the program reviews did not discuss the scope of the outcome information (timeframe and geographic coverage) in order to determine whether it was comparable to the scope of the LEP. Lastly, the program reviews did not discuss any known constraints or external factors that may have influenced the reliability of the outcome-oriented information as an effectiveness measure.

OIG surveyed OSHA regional officials about which measures listed in the LEP policy would be critical factors for measuring program performance. These officials most often selected measures such as *Serious Hazards Eliminated*, *Percent of Violations Cited as Serious*, and *Average Violations per Inspection*. They also responded to a follow-up question about which measure was most critical in determining whether an LEP was achieving its goals. Fifty percent of the regions responded that the *Number of Workers Removed from Hazards* was the most critical measure. One official explained the goal was to increase voluntary compliance and reduce workers' exposure to hazards, which was measured by tracking the number of inspections conducted, violations issued, and workers removed from hazards. However, the measures selected by regional officials as critical factors were output inspection statistics and not outcome-oriented measures of voluntary compliance or hazard reduction throughout the targeted industries.

OSHA officials acknowledged constraints to measuring the impact of an LEP include data lags, lack of sub-national data, and the infrequent occurrence of fatalities and catastrophic events. Officials also stated rigorous, causal evaluations take years to conduct at a substantial cost, and often require more data than are available to reach statistically valid conclusions about the impact of an emphasis program.

However, OMB Circular A-11, Section 270.3, states:

> Frequent reviews provide a mechanism for agency leaders to keep an agency focused on an identified set of priorities, diagnose problems, and opportunities through an analysis of disaggregated data, learn from past experience, and decide next steps to increase performance and productivity…. Agencies are strongly encouraged to plan for and invest in the capital resources needed to conduct useful data-driven reviews.

Overall, the regions' approach to measuring the LEPs' impact using inspection statistics was limited to demonstrating hazards were corrected at the inspected worksites for that particular instance. This approach did not provide complete information about the program's long-term impact on targeted hazards. It did not address the impact of OSHA's outreach and general presence in the targeted industry or occupation, or whether the corrections obtained at the inspected worksites were temporary or permanent. Therefore, the LEP performance reviews did not provide sufficient information to demonstrate the programs' overall impact on the targeted hazards.

NO ASSESSMENTS PROVIDED FOR STATE LEPS

States operated 166 LEPs during FYs 2011-2013. OSHA did not require states to provide performance reviews of their individual programs. Under the *Occupational Safety and Health Act of 1970*, states are required to maintain occupational safety and health programs that are at least as effective as OSHA's programs. OSHA monitors and reviews states annually to determine whether the states are operating as effectively as OSHA, are achieving their strategic and annual performance goals, and are meeting their mandated responsibilities. However, OSHA does not assess whether the state LEPs are achieving their goals and improving safety and health conditions in targeted industries. States generally did not provide OSHA with information on performance reviews of their individual LEPs, unless the state had established an LEP-specific strategic/performance goal (subject to OSHA monitoring) or reported the information voluntarily to federal OSHA.

According to OSHA officials, federal OSHA's involvement with State LEPs is generally limited to reviewing the results in the *Federal Annual Monitoring and Evaluation* and providing technical assistance. However, officials stated many states incorporate LEP goals in their five-year strategic plans and annual performance plans, which are submitted for OSHA's review and approval. Officials also stated progress on these goals is often discussed in the *Federal Annual Monitoring and Evaluation*, which covers inspection goals, priorities, and other performance indicators. Officials provided the following example: the New York State's strategic and performance plans contained goals for reducing the injury and illness rate in three public-sector agencies: County Level Police Protection, Fire Service, and Healthcare. New York State conducted targeted inspections in each of these three agencies. For FY 2013, New York State

officials reported progress on the goals. For example, fire protection services had a 61 percent reduction in the industry's injury and illness rates from CYs 2008 through 2012. Because OSHA did not receive state reports on LEPs, it may have missed opportunities to identify best practices for addressing hazards or industries that pose a particular risk to workers.

As demonstrated by the New York State example, some states may be assessing their LEPs using outcome-based measures, but this cannot be verified because OSHA does not require states to provide LEP assessments. OIG surveyed state officials about the performance measures listed in OSHA's LEP policy to solicit their opinions on the critical factors for measuring program performance. Most state responders (12 of 17, or 71 percent) identified the outcome-oriented measure *Decline in Occupational Injuries, Illnesses, and Fatalities* as a critical factor, and 57 percent said it was the most critical factor. However, the number of states using outcome-based measures to assess their LEPs cannot be confirmed without review of their reports. For example, 7 of 10 (70 percent) of OSHA regional officials also selected *Decline in Occupational Injuries, Illnesses, and Fatalities* as a critical factor, but only 16 percent of OSHA's LEP performance assessments actually used that measure.

OSHA LACKED GUIDELINES AND DOCUMENTATION FOR SELECTING HIGH-HAZARD TARGETS FOR NATIONAL EMPHASIS PROGRAMS

OSHA did not have NEP-specific administrative guidelines to ensure programs were proactively developed and modified to continually address industries and occupations that were high-hazard nationwide. Program development and modification were based on emerging issues or information on hazards. OSHA officials stated they used a "risk-based model" to develop and target NEPs, but did not provide documentation to support how they used the model. Additionally, OSHA did not have written administrative guidelines for developing NEPs that weigh all available information on hazards, identify the highest hazard industries and occupations, and then proactively develop and utilize NEPs for high-hazard industries and occupations. Without a documented risk assessment methodology, OSHA could not demonstrate it focused enforcement resources on the most hazardous industries and occupations posing the greatest risk of death or severe injury/illness.

NEED FOR CLEAR GUIDELINES AND DOCUMENTATION

OSHA did not have clear guidelines or documentation to demonstrate how it categorized the level of risk for potential injury, illness, fatality, or catastrophe that set apart NEP-targeted industries and/or occupations as "high-hazard." OSHA officials stated they used a "risk-based model" to develop and target NEPs, but did not have a written policy or documentation to support how they used the model. NEP directives contained background on the issues or information on the programs' development, but

generally did not explain how OSHA determined the hazards targeted in the NEP were high-hazard as compared with hazards in other industries and occupations not covered under NEPs. As a result, OSHA could not demonstrate it identified the most hazardous industries nationwide for NEPs.

According to OSHA officials, NEPs targeted safety, health, and catastrophic hazards using various information sources, including BLS, the National Institute for Occupational Safety and Health (NIOSH), and the Environmental Protection Agency (EPA). BLS provided industry and occupation specific statistics on injuries, illnesses, and fatalities. NIOSH provided information on condition-specific surveillance, such as laboratory-reported number of adults with high levels of lead in their blood. EPA provided information on facilities with more than a threshold quantity of certain toxic or highly flammable substances, including chlorine, ammonia, and propane.

We analyzed data from three major sources referenced in NEP directives and OSHA inspections. Our analysis showed OSHA did not target and inspect some high-hazard industries in the NEPs. For example, using injury and illness rates, NEPs included more low-rate (21 percent) than high-rate industries (15 percent), and inspections in low-rate industries were less likely to find and cite employers with serious hazards. Also, NEP programs excluded eight high-rate industries and OSHA did not have documentation to support why it did not determine those industries to be high-hazard.

SOME HIGH-HAZARD INDUSTRIES WERE NOT TARGETED AND INSPECTED IN NEPS

Our analysis using data from three of OSHA's major sources and OSHA inspections showed some high-hazard industries were not targeted and inspected in NEPs. Specifically:

- Safety-related NEPs generally targeted industries with higher than average BLS injury and illness rates, but included 31 industries with lower than average rates and excluded 8 industries with higher than average rates.

- Catastrophe-related NEPs generally targeted industries using high amounts of toxic or flammable substances, but some industries using the substances were not inspected under the NEPs.

- Some industries with known health hazards were not targeted and inspected under health-related NEPs.

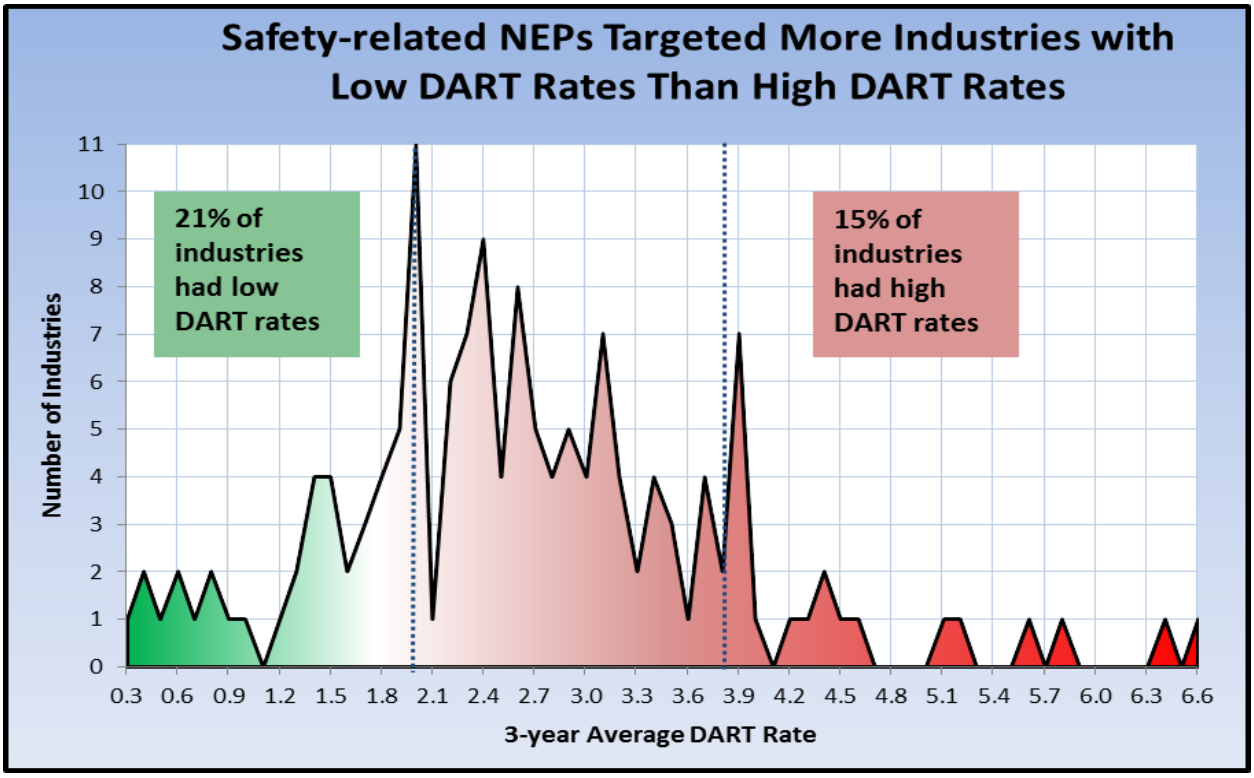
FOR SAFETY-RELATED NEPS, OSHA DID NOT HAVE SUPPORT FOR INCLUDING SOME INDUSTRIES AND EXCLUDING OTHERS

OSHA initiated four safety-related NEPs for Amputation, Nursing and Residential Care, Shipbreaking, and Trenching and Excavation to address industry hazards that result in injuries or fatalities. The program directives for three of the four NEPs specifically mentioned the BLS-reported rates for *Days Away, Restricted and Transferred* (DART), which quantifies work-related injuries and illnesses involving days away from work (beyond the day of injury or onset of illness), or days of job transfer or restricted work activity, or both. Amputation and Nursing and Residential Care NEPs used high DART rates for inspection targeting criteria while the Shipbreaking NEP used the reduction in DART rates for evaluation criteria.

The 4 safety-related NEPs targeted 242 industries with DART rates that averaged 2.6 — most of the targeted industries (79 percent) had DART rates higher than the national average rate of 1.9. Based on the 3-year average rates, DART rates for the targeted industries ranged from 0.3 to 6.6; however, more industries had low DART rates (less than the national average) than high DART rates (2x the national average). Figure 1 shows the distribution of 3-year average DART rates for industries targeted in safety-related NEPs. As illustrated below, 21 percent of industries had low rates (below the national average of 1.9), while 15 percent of industries had high rates (at least 3.8, or twice the national average).[8]

[8] Out of 242 industries targeted in safety-related NEPs, BLS reported DART rates for 147 industries for CYs 2010, 2011, and 2012. Numbers and percentages of industries presented here and in the chart were based on the 147 industries.

Figure 1 – Distribution of 3-year Average DART Rates for Safety-related NEPs



Source: BLS reported DART rates for CYs 2010, 2011, and 2012

Programmed inspection[9] results were considerably different for industries with low DART rates than industries with high DART rates. Inspections were twice as likely to find serious hazards in high-DART industries than low-DART industries — the average number of serious citations per inspection was 1.9 for high-DART industries compared with 0.9 for low-DART rate industries. Inspections were nearly twice as likely to result in no cited hazards for low-DART rate industries (52 percent) than high-DART industries (27 percent).

Also from the analysis of industries with high-DART rates, 8 industries had rates between 4.0 and 6.7, greater than twice the national average, and yet those industries were not covered by an existing NEP (Table 3). OIG surveyed state and OSHA regional officials about how they addressed hazards for 5 of the 8 high-hazard industries. Most responders said either there were not many worksites for covered industries in their jurisdiction or existing local programs covered the industries. However, BLS reported 20,035 establishments nationwide for the 8 high-hazard industries. With an average of 2,504 establishments per industry, the 8 high-hazard industries were larger than 47 percent of industries targeted in the safety-related NEPs. Table 3 lists the eight

[9] Programmed inspections are scheduled based upon objective or neutral selection criteria defined in the NEP directive. We excluded unprogrammed inspections because they are conducted in response to alleged hazard reports of (1) imminent danger, (2) fatality or catastrophe, and (3) complaint or referral.

industries with higher than average DART rates that were not covered by an existing NEP.

Table 3 – Eight Industries with Higher than Average DART Rates Not Covered by an Existing NEP

Industry Description	NAICS[10] Code	3-year Average DART Rate
Manufactured home (mobile home) manufacturing	321991	6.7
Scheduled Air Transportation	48111	6.3
Ambulance Services	62191	5.7
Police Protection	92212	5.1
Amusement and Theme Parks	71311	4.8
Consumer Electronics and Appliance Rental	53221	4.7
Linen and Uniform Supply	81233	4.3
Automobile and Light Duty Motor Vehicle Manufacturing	33611	4.0

Source: BLS reported DART rates for CYs 2010-2012

OSHA officials stated some industries had coverage under other inspection programs. However, without clear NEP guidelines and documentation, OSHA could not demonstrate it considered the safety risk for the eight industries, assessed the current coverage as adequate, and determined NEP coverage was not necessary.

CATASTROPHE-RELATED NEPS GENERALLY TARGETED INDUSTRIES USING HIGH AMOUNTS OF TOXIC OR FLAMMABLE SUBSTANCES, BUT SOME INDUSTRIES USING THESE SUBSTANCES WERE NOT INSPECTED UNDER THE NEPS

OSHA initiated three catastrophe-related NEPs for Combustible Dust, Covered Chemical Facilities Process Safety Management, and Petroleum Refinery Process Safety Management to prevent events that may occur infrequently, but result in high numbers of deaths and/or serious injuries. Two of the programs (Covered Chemical Facilities Process Safety Management and Petroleum Refinery Process Safety Management) specifically mentioned the EPA Risk Management Plan data as part of targeting criteria. For example, the Chemical Facilities Process Safety Management NEP generally did not identify specific industries covered under the program, but listed four sources for inspection targeting: (1) EPA Risk Management Plan data; (2) explosives manufacturing industry (NAICS 325920); (3) OSHA inspections data; and

[10] North American Industry Classification System

(4) area office knowledge of local facilities that are likely to be covered by process safety management of highly hazardous chemicals standards (Title 29, Code of Federal Regulations (CFR), Section 1910.119).

The catastrophe-related NEPs targeted 202 industries, of which 142 (70 percent) were industries with facilities holding more than a threshold quantity of toxic or flammable substances. According to EPA Risk Management Plan data,[11] these 142 industries had 16,532 facilities that reported 1,824 accidental releases of covered substances over a 5-year period, resulting in 38 deaths and 16,695 injuries. However, EPA's data also include 323 industries that OSHA did not target for catastrophe-related NEP programmed inspections. For the 323 industries, EPA data listed 3,093 facilities that reported 433 accidental releases, 9 deaths, and 663 injuries. Twelve industries included 44 percent of the facilities and accounted for 43 percent of the accidents. For example, the industry *Other Basic Organic Chemical Manufacturing* (NAICS 325190) had 56 facilities using hazardous chemicals, such as formaldehyde (solution), chlorine, and ammonia (anhydrous), and reported 48 accidental releases, 1 death, and 37 injuries. However, OSHA did not conduct programmed inspections in that industry.

The directives for Covered Chemical Facilities Process Safety Management and Petroleum Refinery Process Safety Management NEPs contain specific inspection procedures focused on process safety management standards. For those two NEPs, OSHA conducted 427 programmed inspections, of which 368 (86 percent) were from industries listed in EPA data. Inspections in industries listed in EPA data had significantly higher numbers of serious citations per inspection (4.5 versus 1.1) and higher frequency of citing violations of process safety management standards (61 percent versus 20 percent of inspections) than inspections in industries not listed in EPA data.

HEALTH-RELATED NEPS FOUND VIOLATIONS OF HEALTH STANDARDS, BUT SOME INDUSTRIES WITH THE HEALTH HAZARDS WERE NOT TARGETED

OSHA initiated five health-related NEPs for Crystalline Silica, Hexavalent Chromium, Isocyanates, Lead, and Primary Metal Industries to address the serious health conditions (e.g. occupational asthma, silicosis) associated with hazardous chemicals or substances used in industrial processes in 134 industries. Four health-related NEPs (Crystalline Silica, Hexavalent Chromium, Isocyanates, and Lead) specifically mentioned data from NIOSH as part of the targeting criteria. The other NEP, Primary Metals Industries, used BLS fatality data as targeting criteria.

The Lead NEP used NIOSH data on occupational lead exposure. In 2013, a study entitled *Very High Blood Lead Levels Among Adults — United States, 2002–2011,* listed

[11] Accidental Release Prevention Requirements – Risk Management Programs Under the Clean Air Act, EPA standard, Title 40 CFR Part 68, Chemical Accident Prevention Provisions. Data obtained for EPA Program 3 Risk Management Plans as of December 30, 2015.

12 industries as the source of occupational lead exposure.[12] For the study, high blood levels were defined as persistent very high blood lead levels (≥40 micrograms per deciliter) measured over at least a 2-year period. Persistent very high blood lead levels can result in numerous health problems, such as neurocognitive deficits, hypertension, anemia, and kidney dysfunction. Of the 12 industries identified by the NIOSH study, OSHA's Lead NEP included 8 industries (67 percent), but excluded 4 industries that were responsible for the occupational exposure of 35 percent of the study's adults with persistent very high blood lead levels.

Inspections in industries listed in the NIOSH data resulted in a higher frequency of finding and citing violations of lead standards. OSHA conducted 828 programmed inspections under the Lead NEP, of which 399 (48 percent) were from 12 industries listed in NIOSH data, and 294 inspections (36 percent) were from 36 industries listed in the Lead NEP directive.[13] Inspections in industries listed in NIOSH data had a higher frequency of citing violations of lead standards than in other industries (37 percent versus 27 percent of inspections). However, inspections in industries listed in the NEP had a lower frequency of citing violations of lead standards than other industries (25 percent versus 35 percent). Moreover, the rate of issuing citations of lead standards per inspection was higher for industries listed in NIOSH data (1.4 per inspection) and industries not included in the NEP (1.3 per inspection), than for those industries included in the NEP (1.0 per inspection).

OIG RECOMMENDATIONS

We recommend the Assistant Secretary for Occupational Safety and Health:

1. Develop a performance measurement strategy inclusive of output and outcome measures to appropriately assess program goals and objectives.

2. Require and perform periodic program assessments using outcome-oriented measures to determine whether SEPs have a long-term impact on the targeted hazards and health conditions.

3. Establish a written policy for developing and executing NEPs that requires:

    a. A formal assessment of hazards that weighs all available information; defines "high-hazard" industries, occupations, and processes that are not sufficiently covered through other OSHA targeting programs; and uses a documentable methodology for targeting industries, occupations, and processes that have high potential for these hazards.

[12] Centers for Disease Control, *Morbidity and Mortality Weekly Report*, November 29, 2013 / 62(47);967-971
[13] 153 inspections (18 percent) were in industries included in both NIOSH and Lead NEP directive, and 288 inspections (35 percent) were in industries not included in either NIOSH or the Lead NEP directive.

b. An assessment of the nationwide risk exposure to support developing an NEP that includes a risk-based justification for mandating state implementation, taking into account the applicability of the program within each state's area of coverage.

c. Periodic review and update to ensure NEPs continually target the most significant industry, occupation, and process hazards.

MANAGEMENT'S RESPONSE

The Assistant Secretary for Occupational Safety and Health provided a number of comments on the report's results and recommendations, and agreed with the recommendation to establish a written policy for developing and executing NEPs. Nothing in OSHA's response changed our report.

The Assistant Secretary stated external research studies have concluded that OSHA inspections have a causal effect on reducing injuries. However, OSHA has concerns with the feasibility of using outcome measures and stated it does not have the means to determine the long-term impact of SEPs on industry-wide hazard and health conditions.

Our work found that in determining the effectiveness of its programs, OSHA generally cannot rely on ad hoc external research as the studies vary widely in scope and may not specifically relate to SEP programs. At 54 percent of total annual inspections, OSHA committed significant resources to conducting SEP inspections. OSHA should commit to systematic reviews of SEPs (both NEPs and LEPs) using the best available evidence to rigorously and credibly document the effect of its programs.[14] OSHA established SEPs based on evidence that specific hazards exist throughout an industry, occupation, or process, but OSHA does not have a strategy to measure program-impact beyond the one-time correction of hazards identified in the inspections.

Management's response to our draft report is included in its entirety in Appendix B.

We appreciate the cooperation and courtesies OSHA personnel extended to the Office of Inspector General during this audit. OIG personnel who made major contributions to this report are listed in Appendix C.

Elliot P. Lewis
Assistant Inspector General
for Audit

[14] Performance Improvement Council, *P3 Playbook*, Play 3 – Assess Success - Evaluation, see https://pic.gov/playbook.

Exhibits

EXHIBIT 1

TWELVE NATIONAL EMPHASIS PROGRAMS EFFECTIVE FOR FYs 2011, 2012, AND/OR 2013

No.	Directive No.	NEP Description	Effective Date
1	CPL 02-00-069	Trenching and Excavation	9/19/1985
2	CPL 03-00-003	Amputations[15]	10/27/2006
3	CPL 03-00-007	Crystalline Silica	1/24/2008
4	CPL 03-00-008	Combustible Dust	3/11/2008
5	CPL 03-00-009	Lead	8/14/2008
6	CPL 03-00-010	Petroleum Refinery Process Safety Management	8/19/2009
7	CPL 02-02-076	Hexavalent Chromium	2/23/2010
8	CPL 03-00-012	Shipbreaking	11/04/2010
9	CPL 03-00-013	Primary Metal Industries	5/19/2011
10	CPL 03-00-014	Covered Chemical Facilities Process Safety Management	11/29/2011
11	CPL 03-00-016	Nursing and Residential Care Facilities	4/05/2012
12	CPL 03-00-017	Isocyanates	6/20/2013

Source: NEP directives

[15] Subsequent to our audit, OSHA revised its targeting methodology for the Amputations NEP on June 30, 2015. However, the revision did not address the issues identified in this report including assessing the long-term impact of the program on hazards causing or likely to cause amputations.

EXHIBIT 2

STATE IMPLEMENTATION OF NATIONAL EMPHASIS PROGRAMS

States implemented 72 percent of NEPs, covering 92 percent of the states' worksites in NEP-targeted industries. However, 144,438 worksites were exempted from NEP inspections intended to proactively reduce risks in high-hazard industries. The worksites were exempted because states did not implement 28 percent of NEPs, and because OSHA had limited authority to conduct inspections in state plan states and did not have options to conduct NEP inspections at worksites under state jurisdiction. In response to a survey, state officials cited the following reasons for not implementing the NEPs: low injury and illness rates or not enough worksites in the target industries; and lack of resources — funding/staff were needed to cover the state's "core" programs.

OSHA directives mandated state participation in 4 of the 12 NEPs due to the seriousness and prevalence of the targeted hazards nationwide.[16] The four mandatory programs were implemented in most states, covering 99 percent of the states' worksites in the NEP-targeted industries for the programs. However, most exempted worksites were in industries targeted under non-mandatory NEPs where OSHA did not require the states to adopt the programs. Shown below is the rate of state implemention and the percentage of covered worksites for mandatory and non-mandatory NEPs.

Twelve NEPs – Rate of State Implementation and Covered Worksites for Mandatory and Non-mandatory NEPs

NEP Description	State Implementation	Covered Worksites
Mandatory Programs	**94%**	**99%**
Isocyanates	*100%*	*100%*
Covered Chemical Facilities Process Safety Management	*96%*	*100%*
Nursing and Residential Care Facilities	*96%*	*95%*
Primary Metal Industries	*81%*	*99%*
Non-mandatory Programs	**61%**	**89%**
Trenching and Excavation	*96%*	*94%*
Crystalline Silica	*70%*	*90%*
Hexavalent Chromium	*70%*	*68%*
Combustible Dust	*67%*	*71%*
Amputations	*59%*	*71%*
Lead	*59%*	*57%*
Petroleum Refinery Process Safety Management	*52%*	*79%*
Shipbreaking	*15%*	*30%*
All NEPs Overall	**72%**	**92%**

Sources: BLS reported annual average establishments (worksites) for CY 2013; OSHA

[16] As of June 2010, OSHA mandated adoption of all new NEPs by states.

Appendices

APPENDIX A

OBJECTIVE, SCOPE, METHODOLOGY, AND CRITERIA

OBJECTIVE

Can OSHA demonstrate whether SEPs are effective in improving safety and health conditions for workers in high-hazard industries and occupations?

SCOPE

Our scope included all SEPs that were in effect or under development in FYs 2011, 2012, and/or 2013. During the period, OSHA had 12 NEPs and 150 LEPs, and states had approximately 166 LEPs. OSHA and states conducted 151,451 SEP inspections.

Fieldwork was performed at OSHA's National Office in Washington, DC; OSHA regional offices in Chicago, IL and Seattle, WA; and Washington State offices in Tumwater, WA. Fieldwork also included a survey of regional offices and states.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform our audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our results and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our results and conclusions based on our audit objective.

METHODOLOGY

To accomplish our audit objective, we obtained an understanding of SEP processes through survey responses from regional offices and states, and interviews and documentation reviews at the OSHA National Office, sampled regional offices, and Washington State offices. We considered the internal control elements of control environment, control activities, information and communication, and monitoring during our planning and substantive audit phases and evaluated relevant controls. We inquired about the various roles of OSHA offices and states in SEP development, execution, and performance assessment. We analyzed inspection and citation data to identify significant trends and results. We received survey responses from all 10 regional offices and 21 of 27 states, and summarized responses for SEP development and usage. We reviewed performance reports for 10 NEPs and 144 LEPs to determine how program results were reported and used.

DATA RELIABILITY OF SEP INSPECTIONS AND CITATIONS DATA

We assessed the reliability of data for SEP inspections and citations to ensure they were appropriate for testing. We considered the completeness, authenticity, consistency, and accuracy of computer processing, and concluded the data was sufficiently reliable to support our results and conclusions.

We performed edit/logic checks on the inspections and citations universe provided by OSHA. Through this process, we found the universe contained inspections that were not SEP because "strategic" codes were captured in the same field as the SEP program codes. Based on discussion with OSHA officials, inspections that did not include SEP program codes and the related citations were eliminated from the universe. For the remaining program codes, we verified the authenticity of the codes by reviewing descriptions of the SEPs contained in the various directives but could not verify approximately 11 percent of program codes. Follow up with the sampled regions and state revealed most unverified codes were for expired SEPs and the codes were accepted as authentic. The unverified codes for other regions and states were not significant compared to the overall number of inspections.

In addition, we selected a random sample of 60 inspections — 30 for Chicago, and 15 each for Seattle and Washington. We reviewed inspection documentation and traced key data to source documents, and then confirmed results with regional office and state officials. No material discrepancies were noted.

DATA RELIABILITY AND USE OF BLS REPORTED STATISTICS

We assessed the reliability of BLS reported statistics from the *Survey of Occupational Injuries and Illnesses* (SOII) for CYs 2010, 2011, and 2012, and *Quarterly Census of Employment and Wages* (QCEW) for CY 2013 to ensure they were appropriate to support audit conclusions and for use as report illustrations.

SOII is an annual survey to estimate the number and frequency of work-related injuries and illnesses by detailed industry. The SOII's DART rates were used to identify industries with higher than average rates and determine whether those industries were covered by SEP. To assess reliability, we examined BLS Handbook of Methods and other documentation related to data reliability and quality. We reviewed a recent OIG report and ascertained that all recommendations had been resolved and closed. We also examined data over 3 calendar years and confirmed that industries were generally reported consistently throughout the period. We concluded that the SOII's DART rates were sufficiently reliable to support our conclusions and for use as report illustrations.

We used BLS reported DART rates to determine whether the industries targeted and inspected under SEPs were high-hazard compared to the average industry nationwide. In each calendar year of 2010 through 2012, BLS reported DART rates for

687 industries, of which 269 industries were targeted by NEPs and 418 were not. Using the 3-year average of the DART rates, we separated industries by average DART into three categories: (1) rates less than 1.9 (the national average); (2) rates at or above the national average, but less than twice the national average; and (3) rates at least twice the national average. Table 4 shows industries by DART rate category for all industries, NEP-targeted industries, and industries not targeted by NEPs.

Table 4 – Industries by DART Rate Category for All Industries, NEP-targeted Industries, and Industries not Targeted by NEPs

Industries by DART Rate Category	All Industries	NEP-Targeted Industries	Industries not Targeted by NEPs
Rates less than 1.9	310	75	235
Rates at least 1.9 and less than 3.8	307	159	148
Rates at least 3.8	69	35	34
Total Industries	**687**	**269**	**418**

Source: BLS reported DART rates for CYs 2010, 2011 and 2012; OSHA NEP directives

QCEW was an establishment census tracking employment and wages. QCEW's annual average establishments and number of workers were used to provide context for industries nationwide, selected states, and comparison to amputation statistics. To assess reliability, we examined BLS Handbook of Methods and other documentation related to data reliability and quality. We concluded that the QCEW was sufficiently reliable for use as report illustrations.

CRITERIA

- Occupational Safety and Health Act of 1970
- OMB Circular A-11, *Preparation, Submission, and Execution of the Budget*
- OMB Circular A-123, *Management's Responsibility for Internal Control*
- OSHA directive CPL 04-00-001, *Procedures for Approval of Local Emphasis Programs (LEPs)*
- OSHA Field Operations Manual
- Various SEP directives including 12 NEPs listed in Exhibit 1 and 150 LEPs

APPENDIX B

MANAGEMENT RESPONSE TO DRAFT REPORT

U.S. Department of Labor

Assistant Secretary for
Occupational Safety and Health
Washington, D.C. 20210

SEP 20 2016

MEMORANDUM FOR: ELLIOT P. LEWIS
Assistant Inspector General for Audit

FROM: DAVID MICHAELS, PhD, MPH

SUBJECT: Response to OIG's Report No. 02-16-201-10-105, "OSHA Does Not Know if Special Emphasis Programs Have Long-Term Industry-wide Effect"

This memorandum is in response to your transmittal of the Office of the Inspector General (OIG) Audit Report No. 02-16-201-10-105, "OSHA Does Not Know if Special Emphasis Programs Have Long-Term Industrywide Effect" (the Report). The Occupational Safety and Health Administration (OSHA) appreciates this opportunity to provide comments on the audit findings and recommendations outlined in the report.

OSHA is committed to assessing its enforcement activities and ensuring that the Agency is using its resources effectively to reduce the number of workplace injuries, illnesses, and fatalities. The OIG's audit objective asked: *"Can OSHA demonstrate whether SEPs are effective in improving safety and health conditions for workers in high-hazard industries and occupations."* Evaluation of Special Emphasis Programs (SEPs) to determine whether they are effectively targeting high hazard worksites and reducing workers' exposure to hazards is an important and required component for all of OSHA's regional and local emphasis programs.

OSHA regularly uses inspection outcomes, such as the number of serious hazards eliminated and the percent of violations issued as serious, to evaluate whether emphasis programs are effectively reaching worksites where workers are exposed to hazards. In addition, a substantial body of evidence already demonstrates that targeted OSHA inspections result in reduced injury risk for workers at inspected establishments[1]. Because OSHA inspections have been shown to lead to fewer injuries, we believe that ensuring that emphasis programs are successful at reaching worksites with hazards and requiring employers to abate those hazards should meet the objective of "improving safety and health conditions for workers in high-hazard industries and occupations."

[1] For an overview of this literature, see Michaels D. OSHA does not kill jobs: It helps prevent jobs from killing workers. *American Journal of Industrial Medicine* 2012; 55:961-963.

Recommendation 1: Develop a performance measurement strategy inclusive of output and outcome measures to appropriately assess program goals and objectives.

Response: OSHA already requires an evaluation component in all of its regional and local emphasis programs (CPL 04-000-001, *Procedures for Approval of Local Emphasis Programs (LEPs*).

OSHA notes that many of the inspection metrics that OSHA routinely reviews when evaluating SEPs—including serious hazards eliminated, percent of violations cited as serious, and average violations per inspection — are not simply measures of output, but are "outcomes" in the sense that they show whether an emphasis program is successful at inspecting worksites where there are hazards. This level of data-driven review appears to be consistent with OMB Circular A-11 Section 270.3. However, OSHA has concerns with the feasibility of using the metrics that the OIG defines as "outcome" measures—including industry-wide injury, illness, and fatality rates—for assessing program performance. These concerns are discussed in response to Recommendation 2.

Recommendation 2: Require and perform periodic program assessments using outcome-oriented measures to determine whether SEPs have a long-term impact on the targeted hazards and health conditions.

Response: Previous research has already established that OSHA inspections have a causal effect on reducing injuries: A study of inspections conducted by researchers at the University of California and Harvard University demonstrated that programmed safety inspections led to a subsequent 9.4 percent decrease in workplace injury claims at the inspected establishments.[2]

Because the methods used to evaluate the impact of OSHA inspections—comparing the long-term injury rates between establishments that were randomly assigned for inspection and those that were not—are not feasible at the industry level, OSHA does not have the means to determine the long-term impact of SEPs on industry-wide hazard and health conditions. Given the peer-reviewed research that already demonstrates that OSHA inspections reduce injuries, OSHA is concerned that investing substantial additional resources in conducting rigorous, controlled studies of the effect of the special emphasis programs in particular on industry-wide changes in injury, illness, and fatality rates would not further improve the Agency's performance or productivity in accordance with OMB Circular A-11.

The report expresses concern that OSHA has not routinely used what it terms "outcome" measures – which the OIG defines as industry-wide injury, illness, and fatality rates—to evaluate the effectiveness of emphasis programs. OSHA believes that it would be impractical to use such measures to evaluate the effectiveness of emphasis programs. While periodically assessing changes in industry-wide injury, illness, and fatality rates is appropriate for informing the development and modification of emphasis programs, these

[2] David Levine, Michael Toffel, and Michael Johnson, "Randomized Government Safety Inspections Reduce Worker Injuries with No Detectable Job Loss." *Science*, Vol. 336, No. 6083, pp. 907-911 (May 18, 2012).

metrics are not appropriate for evaluating emphasis programs on a routine basis as a program management tool. First, publication of industry-level injury, illness, and fatality rates from the Bureau of Labor Statistics lags the implementation of a new emphasis program by several years, which means an emphasis program would need to be in effect for years before this data could be analyzed and used to inform program management decisions. Second, since fatal injuries and catastrophic events are generally infrequent within any industry targeted by an emphasis program, it often will not be statistically possible to attribute changes in the number of fatal injuries or catastrophic events directly to an emphasis program. Third, BLS injury and illness rates are inadequate for tracking changes in exposure to occupational hazards associated with many serious health conditions (e.g., occupational asthma, silicosis, cancer, etc.) since occupational illnesses are known to be underreported on workplace injury and illness logs. OSHA's review of inspection metrics, on the other hand, provides timely data that OSHA managers can use to determine whether special emphasis programs are identifying and eliminating hazards at establishments targeted for inspection and thereby directly reducing the injury and illness risks that workers face.

OSHA is committed to using available data to improve the evaluation of its enforcement activities. Beginning in 2017, certain employers will be required to electronically submit information from the OSHA Form 300 – *Summary of Work-Related Injuries and Illnesses* – for the previous calendar year. The new reporting requirement will improve OSHA's ability to identify changes in injury and illness rates in industries that are covered by an LEP by providing establishment-level data, although such industry impact evaluations will be limited by scarce Agency resources.

Even with additional data, OSHA notes that individual emphasis programs are just one factor behind changes in industry-wide illness and injury rates, fatalities, and catastrophic events. The number of injuries, illnesses, fatalities, and catastrophic events in an industry will be affected by a range of factors in addition to OSHA's enforcement presence – including long-term changes in economic activity, the composition of the working population, and other internal and external industry pressures. As the OIG points out, OSHA and its State partners are only able to inspect about one percent of all worksites in high hazard industries each year. Given the complex range of factors that contribute to workplace injuries, illnesses, and fatalities, OSHA believes it is not possible for OSHA to isolate the impact of emphasis programs on industry-wide injury and illness at this time.

Recommendation 3a: Establish a written policy for developing and executing NEPs that requires a formal assessment of hazards that weighs all available information; defines "high-hazard" industries, occupations, and processes that are not sufficiently covered through other OSHA targeting programs; and uses a documentable methodology for targeting industries, occupations, and processes that have high potential for these hazards.

Response: OSHA agrees to establish a written policy for developing and executing NEPs that provides guidance for weighing available information about hazards. OSHA also agrees to define "high-hazard" industries for developing a documentable methodology for targeting industries with high potential for hazards. Incorporating high

hazard occupations and processes into the assessment, however, would be redundant since any implementation of a programmed inspection schedule to target high hazard occupations or processes would be based on industries associated with those occupations or processes.

Recommendation 3b: Establish a written policy for developing and executing NEPs that requires an assessment of the nationwide risk exposure to support developing an NEP that includes a risk-based justification for mandating state implementation, taking into account the applicability of the program within each state's area of coverage.

Response: OSHA understands the importance of including state plans in NEPs and will revise its field guidance to ensure that each NEP includes *assessment of the nationwide risk exposure* for greater transparency.

Recommendation 3c: Establish a written policy for developing and executing NEPs that requires Periodic review and update to ensure NEPs continually target the most significant industry, occupation, and process hazards.

Response: OSHA generally agrees with this recommendation. However, see the discussion in the response to 3a regarding high hazard industries, occupations, and processes.

APPENDIX C

ACKNOWLEDGEMENTS

Key contributors to this report were Mark Schwartz, Rebecca Bowen, Sean Ally, Cassie Galang, Nadeem Afzal, Renata Hobbs, Jennifer Roberts, and Mary Lou Casazza.

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