

This presentation outlines trend analysis requirements for the purposes of Occupational Safety and Health Administration (OSHA) Voluntary Protection Programs (VPP) recognition.

The presentation provides information on the background and importance of trend analysis, required documentation, and the various levels of employee knowledge. It concludes with an action checklist and supplemental details to help with OSHA VPP implementation and sustainment efforts.

Objectives

- In this presentation, you will learn to:
 - Summarize the background and importance of trend analysis
 - List trend analysis-related documentation
 - Describe the knowledge leadership/management, key personnel, and the workforce should have regarding trend analysis
 - Identify trend analysis actions to implement and sustain OSHA VPP

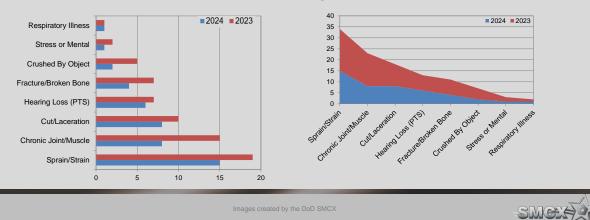
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This presentation is beneficial to safety professionals, VPP representatives, business or assigned trend analysts, and others with trend analysis responsibilities.

Background & Importance

- Included in the WA criteria for VPP
- Identifies patterns in S&H data to prevent mishaps
- Develops plans of action to combat negative trends



PTS = permanent threshold shift S&H = safety and health

WA = Worksite Analysis

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OSHA requires VPP Star sites to have a minimally effective system for identifying and assessing S&H trends. Trend analysis identifies both positive and negative trends in your safety and occupational health management system (SOHMS).

This includes trending:

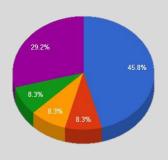
- OSHA injury and illness log information (OSHA Forms 300, 300A, and 301)
- Accident or mishap data
- · Near-miss incidents
- · Employee hazard reports
- S&H inspection findings

Having a minimally effective trend analysis program means the organization can develop plans to address negative trends.

The graphs show examples injury and illness trends, including the types and number of injuries or illnesses an organization experienced. These examples show a decrease for all injuries and illnesses from 2023 to 2024. Graphs created by the DoD SMCX.

Background & Importance

- · Directs resources, controls hazards, and plans training
- Helps establish S&H goals and objectives
- Shares S&H performance with the workforce





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You can use trends to better direct resources, prioritize hazard controls, and plan for additional S&H training needs. If you have repeat findings or findings of the same type, you may be able to direct additional resources towards addressing that systemic issue or implementing a more permanent control measure(s). You can also train inspectors or other members of the workforce to better identify and report similar issues.

Having a minimally effective trend analysis program also helps an organization measure overall SOHMS performance and identify opportunities for SOHMS improvement. Use these improvement opportunities when developing your S&H goals and objectives to enhance your SOHMS.

Your trend analysis program should also explain how you share trend results with personnel throughout the organization. It is important for all levels of personnel to understand what trends you identify and how they can get involved to turn negative trends into desirable trends.

These Service-specific documents required trend analysis:

- DODI 6055.1 "...will provide trend information..."
- OPNAVINST 5100.23 "...to include conducting and compiling information on trends..."
- DAFI 91-202 "...include identified trends and problem areas..."
- AR 385-10 "...analyze loss cause factors, systemic origins, and trends..."
- NAVMC 5100.8 "...potential unsafe trends or tendencies..."

The images show more examples charts and graphs used to display identified trend information.

Images retrieved from Bing Images (free to share and use license) at: http://i.stack.imgur.com/7p7Lt.jpg and http://www.entomofago.eu/wp-content/uploads/2016/04/trend-analysis-393x230.jpg

Documentation		
Trend analysis program, if applicable	S&H inspection findings	
Hazard tracking log	First aid logs or reports	
Injury and illness records	Trend reports	
Employee hazard reports	Trend action or abatement plans	
Mishap and near-miss investigation reports	S&H goals and objectives	
5	SMEXE	

An OSHA VPP assessment of your trend analysis program typically includes reviewing the documentation listed on the slide. This is not an all-inclusive list of applicable documentation. Provide completed forms and documents to your assessment team – do not show blank forms!

Trend analysis also includes a comprehensive <u>written</u> analysis of your trends, which means you can't rely solely graphs that display data. Include an informative report or narrative discussing the data used, what the graphs show, and what the results indicate.

Leadership/Management Knowledge

- Leaders and managers should be knowledgeable about:
 - Trends identified in the last three (3) years
 - Plans in place to address trends and any status on progress
 - How trends are incorporated into future planning and resource allocation



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Leadership should know the current S&H trends and implemented actions to correct any issues.

Leadership should also be able to explain how they use trends in the S&H planning processes to direct resources and develop S&H goals and objectives.

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Key Personnel Knowledge

- Key personnel should be knowledgeable about:
 - Which S&H data is collected and reviewed
 - Process for reviewing and tracking data
 - How to analyze data for trends
 - Positive and negative trends over the last three (3) years
 - Plans of action to address trends
 - How trends are incorporated into S&H planning
 - Methods for sharing trends with management and employees



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Key personnel consist of: S&H staff, human resources personnel, business analysts, industrial hygiene staff, OSHA recordkeepers, S&H trainers, occupational health staff, and managers and supervisors.

Key personnel should know of any system(s) used to assess workplace trends, such as Enterprise Safety Applications Management System (ESAMS) or Reserve Component Automation System (RCAS). You may have an internally developed system or use Excel to record and calculate trending data too. They should also know what workplace trends are assessed and what data is gathered to assess these trends.

Key personnel should know about past trends and how those trends were addressed, or what actions are currently in place to address them.

Key personnel should know how trends and abatement solutions are shared with employees and management.

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Workforce Knowledge

- Employees should be knowledgeable about:
 - Hazard and near-miss reporting procedures
 - S&H trends
 - S&H goals and objectives
 - Actions they can take to combat undesired workplace trends



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Employees should know how to report hazards and near-misses – this reporting is a critical source of your trending data.

Employees should know current S&H trend and S&H goals and objectives. Remember that trending data should be incorporated into your S&H goals and objectives for continuous improvement.

Employees should be able to explain how they help reduce negative workplace trends. Always communicate S&H trends and S&H goals and objectives so employees know can do their part and help eliminate trends from the workplace.

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Action Checklist Develop a written trend analysis program Determine which S&H indicators to trend Identify and train a program manager Collect S&H data for trending Analyze S&H data to identify trends Incorporate trends into S&H planning Share trends with the workforce

Follow this action checklist to implement and sustain VPP expectations for trend analysis. Each of these action checklist items will be covered in more detail on the following slides.

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Trend Analysis Program

- Outline the purpose
- Establish responsibilities
- Identify indicators to trend
- Distinguish how and when to collect data
- · Identify how often data will be trended
- Determine how to track data
- Summarize how to use identified trends



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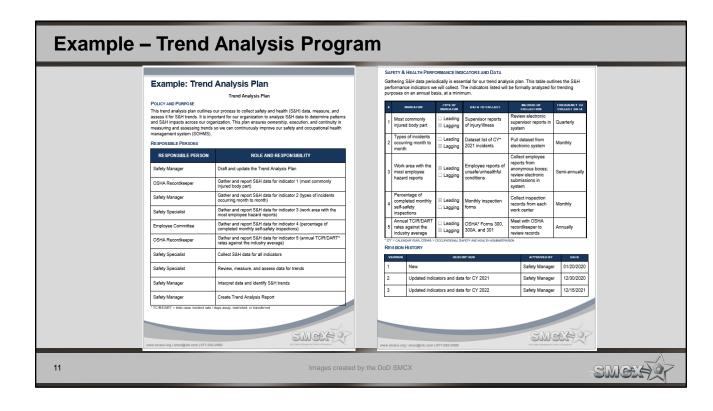
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We recommend developing a written trend analysis program. As with all written S&H programs, a written trend analysis program ensures ownership, execution, and continuity. While not required, having a written program allows your organization to define expectations and maintain an efficient and effective trend analysis process.

The slides list trend analysis program elements you can include in your program, it is not all-inclusive.

Image retrieved from Microsoft Clip Art.



The slide shows an example trend analysis program. The program explains the data to collect, the information to look at, who is responsible, and how often data will be collected.

Images created by the DoD SMCX.

Minimum OSHA VPP Trending Requirements • Injury and illness history • Employee reports of hazards • Mishaps and near-miss investigations • S&H inspection findings

The VPP Policies and Procedures Manual, Cooperative and State Programs (CSP) Chapter III, requires conducting trend analysis on injury and illness history, employee hazard reports, mishap and near-miss investigations, and S&H inspections findings, at a minimum. Other data points you may find valuable for trending purposes include first-aid cases (which coincide with your injury/illness history), work orders, emergency drill critiques, and employee perception surveys.

This data comes from the different S&H processes you like already have in place. For example, injury and illness history can be found on OSHA recordkeeping forms, mishap reports, first-aid logs, and employee occupational health reports compiled by the local clinic.

Analyze inspection findings from all sources of inspection data, including periodic safety office inspections, monthly or quarterly supervisor safety inspections, spot inspections or spot checks, fire extinguisher/eye wash/automated external defibrillator inspections, industrial hygiene surveys, or any other S&H inspections that occur.

Leading Indicators

- Review activities and behaviors, which is proactive
- Measure activities/behaviors that lead to improvement
- Identify positive activities that enhance safety performance
- Dictate plans of action to combat deficiencies
- Pair with lagging indicators to adjust performance



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Leading indicators assess actions, activities, and behaviors to prevent injuries and illnesses or improve S&H performance. They include safety initiatives, safety activities, or reported safety concerns with the goal of preventing incidents. We use leading indicators to predict future events before they occur, correcting issues before the incident. Leading indicators are necessary to achieve the excellence in S&H.

Leading indicators help determine our plans of action – they identify weaknesses, gaps, or concerns, so an organization can identify preventive measures and abate deficiencies. Many workplace S&H programs focus their efforts on lagging indicators that report on the outcomes (incidents), but do not utilize leading indicators that measure proactive activities.

Leading Indicator Examples		
S&H training records	S&H inspection and audit findings	
Workplace S&H meetings	Employee hazard reports	
S&H committee participation	Employee involvement	
Employee perception surveys	Preventive maintenance activities	
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The slide lists some examples of common leading indicators, it is not all-inclusive.

It is important to break down your data into smaller pieces. For example, S&H training records are an example of leading indicator data; however, you can take that information a step further and analyze:

- · What is the completion percentage of the different individual trainings?
- What percentage was complete on time (within XX days)?
- · How many training classes were available for employees to attend?
- · How many employees failed the post-test quiz and needed retraining?

These are only a few examples. The possibilities are almost endless!

On the other hand, too many performance measurements may also become a burden or exhausting to continually analyze. Pick a few key indicators of S&H performance that you wish to measure for each set of trend data.

Lagging Indicators

- Review data after the fact, which is reactive
- · Quantify incident or mishap data
- Identify results of poor workplace safety practice
- Measure the effectiveness of implemented actions
- Help support performance of leading indicators



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Lagging indicators, commonly referred to as trailing indicators, assess your S&H performance using incident or injury information, which is <u>reactive</u> – the events already occurred. They provide information on how many employees were injured or ill, how severe injuries or illnesses were, or how many different incidents occurred.

Lagging indicators are still useful. Using them in combination with leading indicators provides a more accurate assessment of overall SOHMS performance and whether your efforts to proactively reduce injuries and illnesses are effective.

Lagging Indicator Examples		
	OSHA recordable injuries/illnesses	Reports of injury/illness symptoms
	Lost time injuries/illnesses	Injury/Illness costs
	Workers' compensation claims	First-aid cases
	Experience modification rate	Near-misses
1	6	SMEX

The slide lists some examples of common lagging indicators, it is not all-inclusive.

Most lagging indicators revolve around injuries and illness or other incidents that already happened. Once an incident occurs, we failed to prevent it, and the data becomes part of our S&H performance "lagging" indicators.

As with leading indicators, determine exactly what you measure and break down your data into smaller pieces. For example, OSHA recordable injuries and illnesses are an example of lagging indicator data, however, you can take that information a step further and analyze:

- · What parts of the body do employees injure most often?
- What types of injuries or illnesses occur most often?
- · What is the average age of injured or ill employees?
- · During what seasons or in what months do most injuries or illnesses occur?

These are only a few examples. The possibilities are almost endless!

Once again, too many performance measurements may also become a burden or exhausting to continually analyze. Pick a few key indicators of S&H performance that you wish to measure for each set of trend data.

Program Manager/Trend Analyst

- Choose a program manager familiar with:
 - Trend analysis techniques
 - Statistical analysis
 - Data interpretation
- · Train program manager on:
 - SOHMS requirements
 - Trend analysis program
 - Indicators to measure
 - When to report or brief trend analysis findings



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Assign personnel responsibilities for conducting trend analysis.

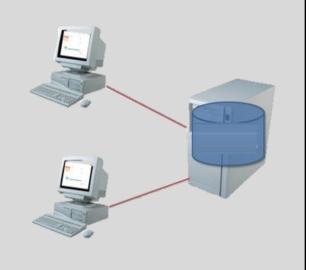
Whomever is responsible for trending should be familiar with how to conduct trend analysis and different trend analysis techniques. Conducting trend analysis is not always an easy task. It takes an understanding of what to trend, how to trend it, and how to interrupt the data. Your personnel may need additional knowledge or education in statistics. Often, organizations assign responsibilities to business analysts or other analytically skilled personnel. Consider providing additional training, if necessary.

Anyone conducting trend analysis should know what information the trend analysis program expects them to review, how often, and how to report trend analysis results.

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Data Collection

- Assign a responsible person(s) for collecting trend data
- · Identify trend data to collect
- Collect and analyze trend data periodically
- Consider a tracking system or tool to compile gathered data



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Assign personnel responsibilities to gather the data you need to conduct trend analysis. Think about the size of your organization – it may be overwhelming for one person to collect the information by themselves.

Identify which data to collect and how often to collect it. For example, you might OSHA Form 300s, first-aid logs, inspections records, employee report forms, and mishap/near-miss reports at your organization. Sometimes, we see organizations wait until the end of the year and only report trend data annually. This allows for significant, undesired changes to occur that could have been identified sooner.

Some sites use VPP Representatives, Unit Safety Representatives (USRs), Additional or Collateral Duty Safety Officers (ADSOs/CDSOs), or Unit Safety Officers (USOs) to collect their trend data for them – they collect inspection records; gather information from first-aid logs; or pull together work order request information. They also coordinate with maintenance personnel, recordkeepers, or other personnel who collect relevant data to collect this information for the program manager.

Many sites utilize tracking software or systems to collect data, and in some cases, even perform basic trend analysis. This is not available or prevalent in all DoD Services and Agencies, though. Personnel with advanced knowledge of Microsoft Excel or Power BI can create a system that captures and analyzes trend data.

The image shows how databases allow for easy compiling, tracking, trending, and sharing of information.

Image retrieved from Bing images (free to share and use license) at: http://i.stack.imgur.com/vZhSH.jpg

Data Analysis

- Create graphs, charts, or tables to display data
- · Explain information on display
- Investigate why changes in data occur
- Conduct statistical analyses
- Compare to leading and lagging indicators



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The most common way to display trend data is by graphs, charts, or tables. While it is important to display your trend data in an easy interpretable way, charts and graphs alone do not constitute "analysis" and are not always so straightforward. Consider writing a short report, explaining the results.

Additionally, determine why changes in data occurred. Ask, what are the potential causes behind increasing or decreasing trends, or even the lack of a trend in an area. Identify factors that may have caused the change, especially those with the most influence, both good and bad.

Statistical analysis helps identify how confident you are that a potential cause is the reasons why a change occurred. It also helps explain what the information or data in a chart or graph represents.

Compare the trends to the leading and lagging indicators you outline in your trend analysis program. For example, let's say you wanted your inspection completion percentage to increase and for inspectors to find more hazards. Some questions you might ask could be:

- Did inspection completion percentages increase or decrease? If it increased, then why? If it decreased, what caused this trend?
- Are inspectors doing a better job at identifying hazards? If yes, then why are they doing better? What
 contributed to better inspections? If no, why did they not identify more hazards? How many completed
 hazard recognition training?

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Incorporate Trends into Planning



Lower slip, trip, and fall injuries by 50% in 2023

NEW GOAL

Complete 95% of assigned self-inspections each month

- Revise S&H goals and objectives
- · Develop corrective action plans
- Direct budget and resources
- Prioritize hazard controls
- Identify areas of excellence

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It is important to use your trend analysis data to improve the level of S&H within your organization. Using the data to drive SOHMS improvements will keep you on track and focused on a prioritized approach towards meeting long-term goals and objectives.

One of the most important planning changes, based on your identified trends, is goals and objectives. Rewrite or revise your goals and objectives each year to help improve upon any undesired trends you identify. You should always write your goals and objectives to address gaps or areas of improvement in your program – trend analysis does just that, identify gaps!

Develop corrective action plans for any undesired trends that you do not incorporate into goals and objectives.

Once you identify your gaps or areas of improvement, you can allocate resources, time, and energy towards correcting S&H issues within your SOHMS.

Don't forget, there will be good trends you find as well! Identify areas where trend data shows you are excelling.

Share Trend Results

- · Periodically monitor trends
- Discuss trend outcomes with leadership
- Communicate goals and objectives to workforce
- Post identified trends and plans of action
- Inform employees immediately of concerning trends



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It is equally important to communicate the trends you identify across the organization. When leaders and employees understand the trends that exist and the plans to correct negative trends, it is much easier to improve your SOHMS.

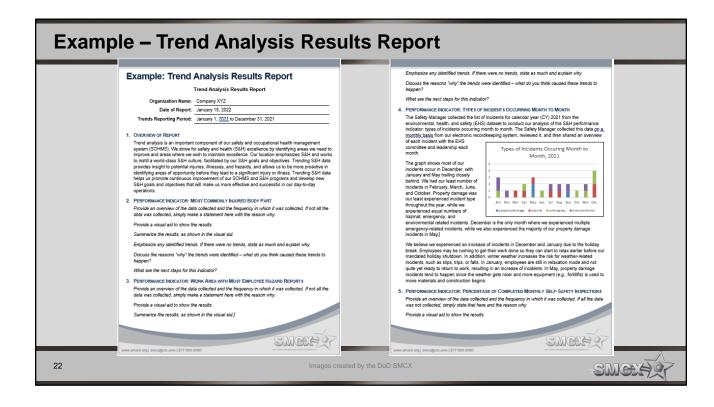
Monitor trends continually, whether it be monthly, quarterly, or some other frequency. When you identify undesirable trends, you can put plans in place to correct them before they get worse.

Communication should start with your leadership as they have the power to generate change and allocate necessary resources.

Communicate trends to the workforce, as well. Employee should understand what trends exist and how they can help to combat the trends. More importantly, as you analyze trends periodically, if you discover negative trends that could impact employee S&H, it may be best to communicate them as soon as possible. For example, you may identify a trend in serious back injuries in the past three months; it is best to communicate this to employees and develop a corrective action plan as soon as possible versus waiting to establish a new goal at the end of the year.

Another effective part of communicating trends is to provide them visually. This can be in the form of posting trends and goals and objectives to safety bulletin boards, sending emails, discussing during supervisor safety meetings, or posting in other conspicuous locations.

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The slide shows an example trend analysis results report. This is just one way to display the data, describe the trends observed, and document the recommendations of improvement going forward.

Images created by the DoD SMCX.

Conclusion

- In this presentation, you learned to:
 - Summarize the background and importance of trend analysis
 - List trend analysis-related documentation
 - Describe the knowledge leadership/management, key personnel, and the workforce should have regarding trend analysis
 - Identify trend analysis actions to implement and sustain OSHA VPP

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