Washington State Department of Labor & Industries

Ergonomic Rulemaking Scoping

Scheduled Airline – Ground Crew Operations Ergonomic Rulemaking

Preliminary Scoping Assessment Work Session – Standards, guidelines and best practices

September 4, 2025

Purpose

This document aims to clarify what is known about work-related musculoskeletal disorders (WMSD) industry best practices, standards, and guidelines in Scheduled Airline – Ground Crew Operations, Risk Class 6802. We aim to gather feedback on experiences from both the employer and worker perspective.

Best Practices – OSHA Alliance Baggage Handling E-Tool

Occupational Safety and Health Administration (OSHA) Alliance

The OSHA Alliance for the Airline Industry and the National Safety Council (NSC), International Air Transport Section, created a baggage handling eTool: https://www.osha.gov/etools/baggage-handling (Alliance was concluded November 12, 2006).

Question for the Advisory Committee:

- Share your experience with this OSHA resource? Is the tool still applicable or is it outdated?
- If this is outdated, can you share desired updates to the resource?
- What are the advantages and disadvantages to using this tool?

Best Practices – Texas Dept of Insurance – Ergonomics for Baggage Handlers

Texas Department of Insurance, Division of Workers' Compensation

The document includes best practices for ergonomic baggage handling in the airline industry: https://www.tdi.texas.gov/pubs/videoresource/essibaggagehand.pdf

Airline industry best practices

This whole section is quoted from Airlines for America (A4A) as part of the initial scoping sessions from January:

Employee education. In addition to employee education, which includes proper lifting techniques and body mechanics, A4A carriers highlight the influence of one's individual health and wellness. Members

support employees in their ergonomic needs by hosting all safety reporting and risk management through their Safety Management System (SMS). Through SMS, carriers use data regarding causal factors to address hazards identified throughout their operation.

Hiring Practices. Baggage handling is inherently physically demanding and requires strength and physical capability to do the work. It is recommended, as necessary and to the extent applicable by law, to consider pre-hire physical testing to screen for individuals that may find the physical work too demanding, for those who may possess preconditions, or have a pre-existing injury.

Training and Monitoring. Baggage handling employees are provided both ergonomic education and hands-on training as a standard of practice among carriers. During awareness training, employees are shown the safest techniques for their body types to do the work, along with instructional emphasis on the potential risks and mitigations. Safe lifting is an important part of this, but so is nutrition, sleep, and use of personal protection equipment (PPE). Training should be supplemented with ongoing reminders and continuous education. In addition, there should be continuous monitoring (auditing) of proper use of lifting techniques. When feasible, rotating through the various positions of working flights is implemented to allow recovery time.

Workstation Design

- Foot rests and anti-fatigue mats are provided by many carriers for standing positions where practical.
- Adjustable keyboard and monitor height.
- Ticket counter acceptance:
    - Bag well and bag scale are equal, or slightly taller than, the bag belt.
    - Distance between the bag well and bag belt should require the agent to take ~2 steps, discouraging improper body mechanics (i.e. twisting at the waist).

- Best practices related to specific WMSD hazards, such as baggage handling:
    - Demonstrate proper lifting techniques.
    - Circumstances that require a team lift, such as moving heavy or awkwardly shaped items.
    - Testing the item weight in advance of handling.
    - Use of appropriate PPE, including knee pads and anti-fatigue mats.
    - Limitations to accepted bag weights as a checked item.
        - "Heavy" tag applied to bags greater than 50lbs in weight.
        - Maximum limit of 99lbs applied to every checked item.

- Best practices related to employee training:
    - Provide training and education that demonstrates "why" ergonomic principles are important.
    - Adapting communications to account for how groups receive information to achieve the desired impact (i.e. in-person, web-based, email, posters, etc.).

- Best practices for involving employees in identifying, assessing, and fixing WMSD hazards and

evaluating the effectiveness of the fixes:

  - Maintaining a hazard reporting system, along with a detailed list of policies and procedures accessible via manuals.
  - Carriers empower individual employees to exercise their authority to cease unsafe work at any time (stop work authority).
  - As part of the SMS "re-check" process, systematically reviewing job hazard analyses and safety risk analyses to assess for efficacy of the corrective actions, as well as any needed updates to work practices or PPE. Conveying this information with affected employees annually, and whenever a change in their work environment occurs.
  - Awareness campaigns and injury reduction initiatives.

- Experiences implementing best practices or other information related to best practices that would be helpful to share?

  - Ergonomic injuries are often cumulative in nature, resulting from improper positioning over a long period of time. They can have a vast number of causal factors, many of which are beyond the weight of the item/device being lifted. An individual's body mechanics, personal health and wellness, physical fitness, posture, footwear, hobbies, and other factors, may contribute to ergonomic injuries.
  - Emphasis placed on an employee's adherence to the training regimen is equally as important as their adherence and awareness to their ergonomic routine.
  - As such, any solutions put in place should address these causal factors. Relying on engineering controls alone will not result in a meaningful reduction in workplace ergonomic injuries.

Questions for the Advisory Committee:

- Describe how successful the above best practices are, and share the lessons learned from implementing these best practices.
- Detail other best practices or experiences to consider for rulemaking.

International Standards – ISO standards for baggage handling

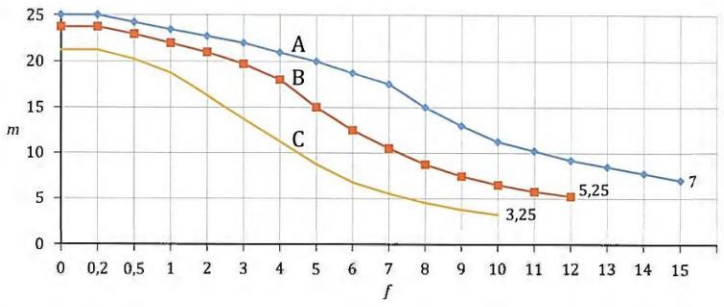
The International Standards Organization (ISO) has a three-part standard regarding Aircraft Ground Handling – Checked Baggage.

ISO 12604-1: Mass and dimensions

ISO 12604-1 specifies the weight and dimensions of checked baggage. Standard baggage should weigh between 5 and 50 pounds (very lightweight bags cause problems in automated systems). Heavier bags need to be tagged and handled with special measures, either an additional worker or with equipment. Bags that weigh more than 100 pounds are not allowed as checked baggage and need to be handled as freight. The standard also specifies the dimensions of baggage, not for ease of handling, but instead to ensure conveyability so that manual handling can be avoided. Oversize baggage should be conveyed separately as needed to avoid jamming the system. Manual handling of baggage should be avoided through use of equipment and automation. Where manual handling is required, an assessment of the lifting task is necessary, considering the duration and frequency of lifting.

ISO 12604-2: Handling requirements and guidelines

ISO 12604-2 specifies the methods for risk evaluation of manual lifting of baggage, which is a three-step process. Step 1 plots the weight and frequency of lifting for three different total durations, as shown in Figure 2. Lifting tasks that exceed the limits for any of the durations would require mitigation measures. If lifting is below limits, the analysis specified in Steps 2 and 3 is still required.



Key

m	mass (kg)
f	frequency (number of lifts per minute)
A	handling duration less than 1 h
B	handling duration from 1 h to 2 h
C	handling duration from 1 h to 8 h

Figure 2 — Maximum frequency for manual lifting related to mass of the object in ideal conditions, for three different lifting durations

Step 2 involves calculating the maximum acceptable load (MAL), which is 50 pounds for baggage that can be lifted within 10 inches from the body. As the distance from the body increases, the MAL decreases. At a reach distance of 26 inches, the MAL is zero. The MAL is also decreased if there is rotation of more than 90º required when lifting, or if baggage must be lifted more than 22 inches. Lifting that exceeds the MAL requires mitigation measures. Lifting below the MAL still requires the evaluation detailed in Step 3.

Step 3 is an assessment of the acceptable cumulative mass (ACM), or total weight of baggage carried in a day, based on carry distance. If bags are carried less than 66 feet, the ACM is limited to 22,046 pounds. If carried more than 66 feet, the ACM is 13,228 pounds. Carrying that exceeds the ACM requires mitigation measures. Mitigation measures listed in the standard include equipment, adequate staffing, limiting carry distances, reducing multiple lifts of the same piece of baggage, training, recovery breaks, and limiting the frequency of lifts and carries.

ISO 12604-3: Workstation ergonomics

ISO 12604-3 specifies the dimensions and environmental conditions for areas where baggage is handled, not including passenger check-in areas or cargo holds of aircraft. Environmental conditions include heat, cold, noise, equipment fumes, and lighting. Dimensions include adequate headroom, heights of conveyors and work platforms, space to allow moving without twisting, reach distances, carry distances, and buffer spaces to stage baggage for loading. The standard also specifies seating in baggage handling areas for recovery purposes, and limiting conveyor speeds to limit lifting frequency and to keep baggage from piling up.

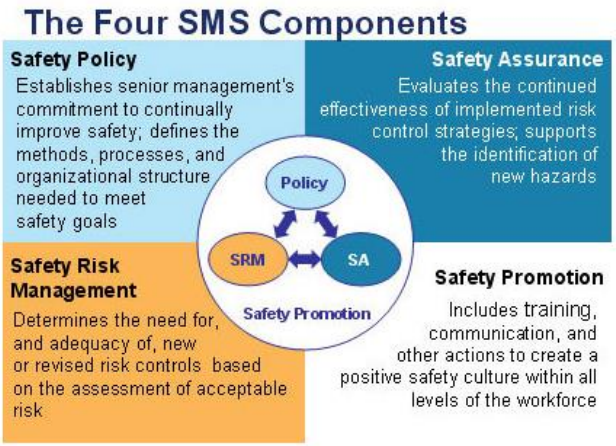
Questions for the Advisory Committee:

- For airlines that operate internationally, describe the experience with these standards when considering operations in America.
- Identify components of, or principles from, the ISO standards which should be considered during the rulemaking.

Other Federal Standards - Federal Aviation Administration (FAA) Safety Management System

The FAA describes its Safety Management System (SMS) as the "formal, top-down, organization-wide approach to managing safety risk and assuring the effectiveness of safety risk controls"[1] within aviation organizations. As an internationally-recognized best practice for the management of safety, SMS provides a systematic way to proactively develop and implement mitigations that are appropriate to specific aviation environments and operations.

The SMS is comprised of four foundational components: safety policy, safety risk management, safety assurance, and safety promotion:



Each of these components are summarized briefly below. Citations are offered to link the component to the relevant regulatory authority generally, and for purposes of comparison.

Component 1: Safety Policy (14 CFR 5.21)

[1] Safety Management System (SMS) | Federal Aviation Administration

This component establishes senior management's commitment to continually improve safety, and define methods, processes, and organizational structure needed to meet safety goals. They include, but are not limited to:

- *Safety accountability*: Requires duties and responsibilities for achieving safety performance objectives be described in the safety policy for the accountable executive, all members of management, and employees.
- *Designation and responsibilities of required safety management personnel*: Requires the organization to identify which individual in the organization will serve as the accountable executive.
- *Designation of management personnel*: Requires the organization to ensure that sufficient management personnel are available to provide support for the essential SMS functions, assisting operational managers, and advising the accountable executive.

Component 2: Safety Risk Management (SRM) (14 CFR 5.51)

This component determines the need for, and adequacy of, new or revised risk controls based on the assessment of the acceptable risk, including, but not limited to:

- *Hazard identification*: The hazard identification process flows from the systems analysis.
- *Safety risk analysis*: For each identified hazard, the organization should define the injury or damage that may result from an incident while exposed to the hazard. To determine potential for injury, process owners need to define the likelihood of occurrence of incident or accident and associated severity.
- *Safety risk assessment*: Once the risk is analyzed, the process owner must determine whether the risk is acceptable, meaning that a decision must be made regarding what level of safety risk is acceptable.

Component 3: Safety Assurance (SA) (14 CFR 5.71)

This component is designed to evaluate continued effectiveness of implemented risk control strategies and supports identification of new hazards. Activities include, but are not limited to:

- *Monitoring the operational processes and environment*: Organizations should understand their operating environment and processes to monitor for changes.
- *Auditing operational processes and systems*: Organizations should develop procedures for auditing that describe the audit process, criteria, scope, frequency, method for selecting auditors, and methods of documentation and recordkeeping.
- *Evaluation of SMS and operational processes and systems*: The evaluation should include all available data about the organization, including information from the audits conducted by the operational management and/or process owners.
- *Investigation of incidents and accidents*: Investigations should be treated as an opportunity for organizational learning to prevent repeat errors and/or change organizational processes to reduce mistakes.

- *Investigation of potential noncompliance*: The focus of the investigation should reveal information that, when utilized correctly, will identify system deficiencies that led to non-compliance with regulatory standards or other safety risk controls.
- *Data analysis*: Analysis involves examining data acquired from various sources, as specified in the safety performance monitoring and measurement section, in order to make inferences about the safety performance of operational systems and the SMS.
- *Safety performance assessment*: Under the safety performance monitoring and measurement section, the organization is required to collect and review safety performance data.

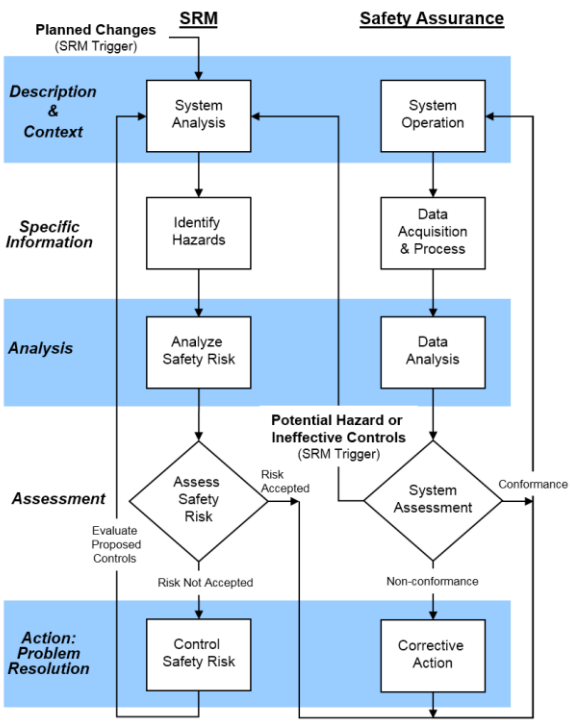
Component 4: Safety Promotion (14 CFR 5.91)

This component includes training, communication, and other actions designed to create a positive safety culture within all levels of the workforce, and includes, but is not limited to:

- *Competencies and training*: Training is expected to be specific to employee roles and responsibilities regarding their duties associated with the maintenance of the SMS. Training can take any form or manner the organization determines is acceptable when considering the size and complexity of their operations.
- *Safety communication*: The accountable executive must ensure communication mechanisms are available and are effectively used. The delivery system should be appropriate to the size and complexity of the organization.

Of these components, SRM and SA are key interactive processes of the SMS. The flowchart below provides a visualization of these components and their interactions. The interface attribute concerns the

input-output relationships between the activities and the processes. This is important where interfaces between processes involve interactions between different departments, contractors, and others:



Questions for the Advisory Committee:

- Tell us about your experience with using the SMS approach, including:
  - Strengths and benefits of the SMS approach;
  - Challenges in implementing the SMS approach;
  - Anything else that you think we should know about SMS.

  Identify components or principles from the SMS that should be considered as part of this rulemaking,