



Aon
Casualty
Risk
Control
Solutions
for
**General
Industries**

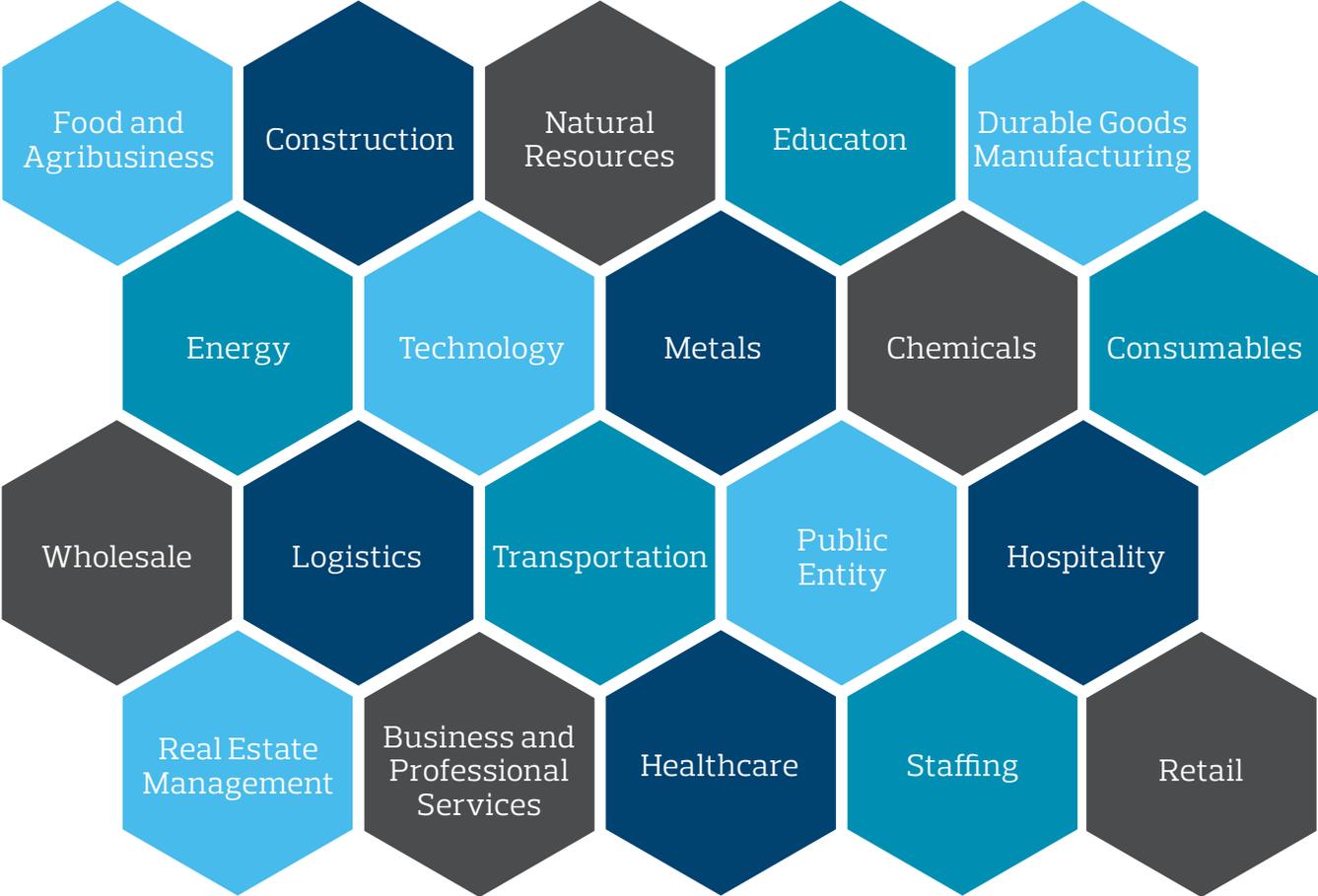
AON

Unparalleled Experience and Knowledge

With an average of over 20 years of safety experience per consulting staff member, Aon is the recognized leader in risk mitigation and insurance solutions for all commercial industries.

Our clients represent all sectors of business, including financial institutions, manufacturing, wholesale distributors, healthcare, transportation, retailers, business services, construction, agriculture, energy and utilities, municipalities, hospitality, risk mitigation and restaurants. Aon provides current, relevant solutions for each industry as our risk control practitioners stay informed on the latest developments and current regulatory issues.

As a result, Aon’s Casualty Risk Consulting team has the experience and ability to develop customized solutions to address the challenges of managing pre-loss and post-loss risks associated with commercial operations today across the full life cycle of a business.



Aon Client Promise® Platform

The Aon Client Promise® platform is our continuous improvement model to discover, develop, deliver and review the success of our solutions for the benefit of our clients.

The Aon Client Promise® platform ensures a thoughtful and thorough approach is taken to align our client goals and needs with targeted solutions, with the overall goal of continuous improvement and total cost of risk reduction (TCoR).

Aon offers a variety of solutions to our clients that are tailored to meet the unique organizational exposures of industries. Aon's risk control services are designed to address occupational safety program development, ergonomics, OSHA compliance, employee training, general liability, product and fleet safety.



Discover

Thoughtful approach to align client needs with prescriptive solutions

- Casualty data analytics
- Loss profile review
- Diagnostic of programs and protocols

Develop

Agreed upon road map to reduce Total Cost of Risk of your organization

- KPI design
- Data collection redesign
- Strategic action plan

Deliver

Deliver effective and sustainable pre- and post-loss solutions

- Safety program development
- Safety culture improvement
- Regulatory support
- Training
- Return to work

Review

Measure performance, demonstrate ROI and value, re-assess and re-engage based on performance

- Metrics review
- Spectrum analytics
- Leading and lagging indicators

Custom Solutions with a Multi-Disciplinary Approach

One of the challenges facing organizations is the ability to harness resources and maximize the value of multi-disciplinary teams to develop and implement business strategies. Finance, operations, legal, safety, sales and human resource teams must work collectively to maximize business results.

Aon facilitates the identification of risk; development of solutions options; and deployment of resources to effectively implement selected solutions, and measure performance to allow for continual improvement.

Aon has a diverse team of risk control specialists to address traditional and emerging risks associated with the production, distribution and utilization of your products and services. Our comprehensive range of solutions are designed to minimize cost and assist in the reduction of injury – employee and third parties. We can quantify your portfolio of risk; design practical solutions; optimize capital allocation; measure results; reduce volatility; improve quality and build workforce commitment. Our philosophy is a simple one – with proper planning and risk identification, followed by sustainable prevention strategies, risk can be minimized, thus reducing volatility for the business.



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Safety Consultation Services

- Safety program design
- Safety program assessments
- Safety policy and procedure development
- Loss analysis, trending and benchmarking
- Regulatory assistance
- Safety committee facilitation and training
- Contractor safety

General and Product Liability

- Premises operations assessments
- Slip/trip/fall management
- Product liability assessments and recommendations
- Mock scenarios for product liability response

Safety Training

- Training for all levels of employee
- eLearning platform
- Multi-lingual course offerings

Ergonomics Consulting

- Program evaluation and development
- Job and risk analysis
- Workstation process analysis and design
- Employee/engineering/management training

Safety Management Systems

- Safety culture assessment
- Safety culture enhancement
- Behavior based safety
- ISO 45001 evaluations
- Safety management system development
- Leadership and transformational safety

Fleet Safety Services

- Program audits
- Department of Transportation (DOT) assistance
- High risk driver management
- Technology/training vendor selection guidance
- Policy and procedure document development

Data Analytics

- Casualty Analytics – Powered by Laser™
- Laser™
- Spectrum™
- Custom dashboards

Industry, Technical and Global Span

Aon’s team of risk control consultants bring a wide variety of skills, industry expertise, technical excellence, and global reach to assist in reducing TCoR for your organization. Aon consultants dedicated to both industry specialization and specific subject matter expertise are located throughout the world.



Unparalleled Access to Data

Aon's Global Risk Consulting team provides clients with risk evaluation and mitigation strategies to address exposures to loss. We customize each engagement to our client's needs to ensure solutions impact the overall TCoR for the organization. Aon assists clients in managing loss exposures and minimizing potential risks while helping to build a safer work environment.

Casualty Laser™

Launched in 2011, and with industry-specific metrics introduced in 2016, Aon Casualty Laser™ is the flagship of our series of data analytics approaches and is typically used for organizations with casualty loss picks of \$5 million or more. Now with over \$9 Billion in accumulated loss data, the Casualty Laser™ is conducted primarily for Workers' Compensation (WC), but includes benchmarks and analyses of Automobile Liability (AL) and General Liability (GL) lines as well. Client loss and payment information is compared to over 90 industry and proprietary benchmarks, with cost savings estimates projected by specific initiative or solution. In addition to commonly-used loss analyses by injury type, location, etc., we examine additional elements such as payment patterns, litigation trends, disability elements and catastrophic claim rates.

Casualty Analytics Powered by Laser™

This study includes many of the same analyses as Laser™, but without the payment transaction elements and corresponding indicators of cost leakage. Casualty Analytics Powered by Laser™ delivers over 20 pre and post loss benchmark metrics and a graphical representation of loss trends and requires only a detailed loss run for completion. This is appropriate for organizations with loss picks between \$500,000 and \$5,000,000. The output is WC oriented, although AL and GL can be included.

Claims Process Effectiveness—WC

Key Component	"Stoplight" Assessment	Explanation
Claim closure rate	●	For the most recent 12 month period, 99.9% of claims were closed within this period. This rate is significantly outside accepted norms.
Claim report lag time	●	The percentage of claims that were reported within three days of the date of loss to the TPA is 77.3% , which is within the accepted norms. (Note that the average cost per claim increases with delays after seven days from the injury.)

Medical Cost Management—WC

Key Component	"Stoplight" Assessment	Explanation
Ratio of paid medical to total paid	●	The medical paid accounts for 58.5% of the total paid amount. This rate is slightly outside of accepted norms.
Catastrophic medical cases	●	There is no CAT claim with medical paid >\$200,000 within 18 months of injury.
Proportion of large medical claims	●	Slightly outside accepted norms, with 6.1% of claims accounting for a substantial percentage of medical paid.

Litigation Management—WC

Key Component	"Stoplight" Assessment	Explanation
Ratio of paid expense to total paid	●	Paid expenses account for 16.2% of the total paid, which is significantly outside the accepted norms.

Safety and Prevention—Key Cause Trends

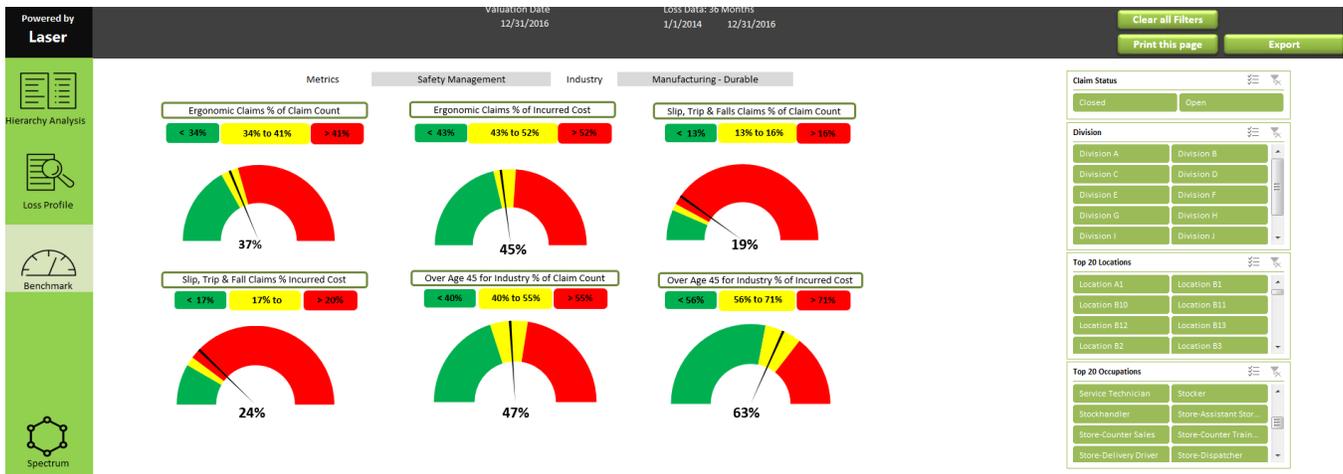
Key Component	"Stoplight" Assessment	Explanation
Ergonomic Claim Frequency [% count]	●	The frequency of ergonomic claims/MSEs (8.6%) is slightly outside of the Laser results average for the Wholesale/Distribution industry.
Ergonomic Claim Severity [% incurred]	●	The severity of ergonomic claims (\$2.3%) compares unfavorably to the Laser results average for the Wholesale/Distribution industry.
Average cost per ergonomic claim	●	The average incurred per ergonomic injury claim (\$26,140) compares unfavorably to the Aon peer average for the Wholesale/Distribution industry.
Slip or Fall Claim Frequency [% count]	●	The frequency of slip and fall claims (11.5%) compares favorably to the Laser results average for the Wholesale/Distribution industry.
Slip or Fall Claim Severity [% incurred]	●	The severity of slip and fall claims (15.4%) is better than or, within the Laser results average for the Wholesale/Distribution industry.
Average cost per slip/fall claim	●	The average incurred per ergonomic injury claim (\$21,618) compares unfavorably to the Aon peer average for the Wholesale/Distribution industry.



Aon Spectrum Analytics™

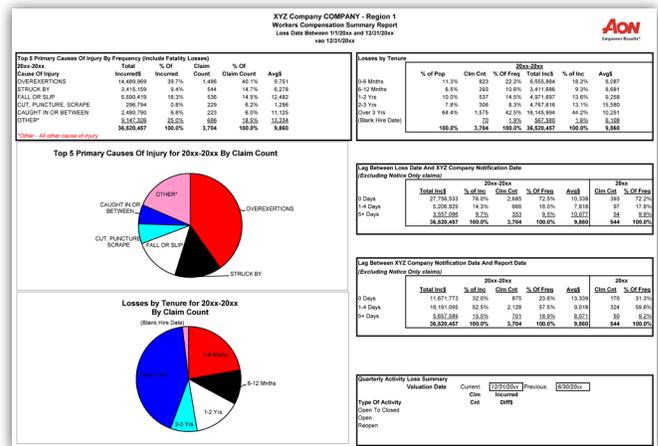
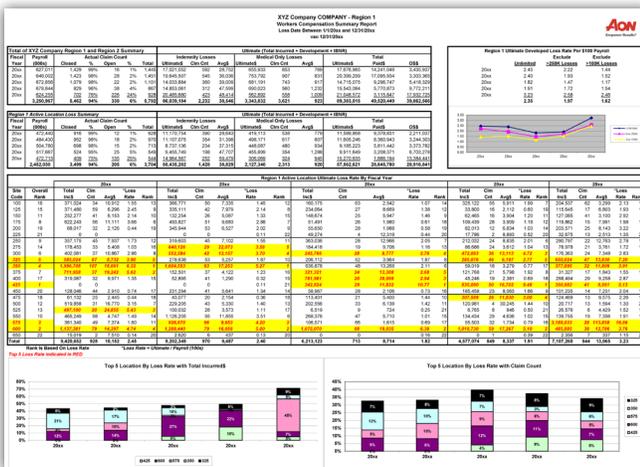
Leveraging the wealth of data and insights accrued in our proprietary Casualty Laser database, in 2017 Aon introduced the Aon Spectrum Analytics™ platform, an innovative benchmarking tool that provides clients with an unparalleled – and interactive – view of key loss prevention and claims management performance indicators and cost drivers. Using an interactive dashboard, clients can perform virtual benchmarking of their operations, easily comparing KPIs between regions, locations and even occupations, resulting in the identification of problem areas within minutes.

This combination of proprietary benchmarking and advisory services creates an unparalleled next step in leveraging data to manage your loss costs, by far the largest single element of Workers' Compensation TCoR.



Safety Performance Dashboards

Client-specific dashboards are designed to provide a compelling visual display of critical metrics of safety performance. Organizational culture is incorporated into the design of appropriate metrics and the output is an organizationally focused snapshot of safety performance – providing stakeholders with the necessary actionable data to identify improvement opportunities and measure progress toward goals.



Consultative Services

Safety Assessments

Aon leverages our risk control experience to evaluate injury prevention and risk control program elements (e.g. the Safety Management System). The risk assessment may include a review of cost drivers, incident investigation protocols, safety audit processes, cost allocation methods, safety program and training implementation, safety leadership development, OSHA compliance programs, contractor safety and evaluation of high hazard operations. Findings are benchmarked against best practices and opportunities for improvement are identified. Aon then collaborates with client leadership to develop strategies that directly improve operational and client financial performance.

Safety Program Development

Aon consultants assist clients in the evaluation and development of safety programs that are specific to your risk profile, including employee and supervisory training programs, investigation protocols, program and training documentation, safety communications, return-to-work procedures, safety inspections, OSHA regulatory assistance, safety committee effectiveness, and support for district or regional team conferences. Aon will help draft injury prevention policies and programs on a variety of topics including:

- Incident investigation
- Ergonomics injury prevention
- Incident reporting
- Facility inspections
- Return to work
- Safety committees
- Compliance topics
- Fleet and driver safety

Our team will create the necessary job aids or tools to promote the successful implementation of the policy and programs:

- Training materials
- Operational and supervisory key performance indicators for safety
- Reporting forms
- Inspection checklists
- Supervisory tools

Construction and Contractor Safety Management

Often leveraged during facility expansions, renovations and/or new product launch, Aon's subject matter experts in construction safety assist clients in safety pre-planning, interactions with contractors, supervisor training, accountability programs and periodic site reviews.

Risk Analysis Matrix Methodology

The following matrix methodology demonstrates the recognition of risk, the probability of occurrence and an organization's willingness to accept a specific risk. It is not intended to reflect a specific risk event but rather a process of evaluating "what might occur" and what "impact" a particular event may have at the facility. Companies must determine the acceptable level of both impact and probability of an event in determining when and what mitigating strategy to use. All risk cannot be eliminated, resulting in some risks or exposures that might be tolerated. The risk of complacency in an environment in which only a few incidents of marginal significance have occurred may impact both recognition of risk as well as intervention strategy.

Qualitative measurement of likelihood

Level	Descriptor	Description
A	Almost Certain	An event is expected to occur in most circumstances
B	Likely	An event will probably occur in most circumstances
C	Moderate	An event should occur at some time
D	Unlikely	An event could occur at some time
E	Rare	An event may occur only in exceptional circumstances

Qualitative measures of consequence or impact

Level	Descriptor	Example detail description
1	Insignificant	No injury, low property impact
2	Minor	Potential for injury, moderate property loss
3	Moderate	Increased potential for injury, slight property damage
4	Major	High potential for injury or property loss
5	Catastrophic	Significant injury or damage to property

Qualitative risk analysis matrix level of risk

Likelihood	Consequence or Impact				
	Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
A	High	High	High	High	High
B	High	High	High	High	High
C	High	High	High	High	High
D	High	High	High	High	High
E	High	High	High	High	High

Legend

- High risk - detailed research and management planning required
- Significant risk - senior management attention needed
- Moderate risk - management responsibility must be specified
- Low risk - manage by routine procedures

Aon

ELECTRICAL SAFETY PROGRAM

I. PURPOSE

The purpose of this program is to establish minimum acceptable standards for electrical safety practices within the organization. The program includes safety training for all employees, safety committees, working rules, specialized equipment for electrical safety, and safety procedures. The program is intended to reduce the risk of electrical injury and property damage. The program is intended to be consistent with OSHA regulations and other applicable laws and regulations. The program is intended to be consistent with the organization's safety policy and other applicable policies and procedures.

II. SCOPE

The program applies to all employees and contractors who are involved in electrical work. The program applies to all electrical work performed within the organization's facilities and on its behalf. The program applies to all electrical work performed by the organization's employees and contractors. The program applies to all electrical work performed by the organization's employees and contractors. The program applies to all electrical work performed by the organization's employees and contractors.

III. RESPONSIBILITY OF EMPLOYER

- Develop the organization's safety policy and procedures.
- Develop the organization's safety policy and procedures.
- Develop the organization's safety policy and procedures.

IV. DEFINITIONS

1) Electrical safety: The practice of preventing electrical injury and property damage.

2) Safety committee: A group of employees and contractors who are responsible for the organization's safety program.

3) Safety training: The process of providing employees and contractors with the necessary knowledge and skills to perform electrical work safely.

4) Safety procedures: The set of rules and regulations that govern the organization's electrical work.

Project Meeting Minutes

Project: Contract No. 100

Meeting Date/Time: Field Office

Attendees:

- Project Manager: Names
- AON: Names
- Electrical Contractor: Names
- Mechanical Contractor: Names
- Foundations Contractor: Names

Minutes to Proceed	Contract Completion Date
Contract Duration	Contract Value
Days Elapsed	Complete to Date
Days Remaining	Contract Remaining
Percent Complete (Time)	Percent Complete (Cost)

- Incidents/Accidents -
- Aon Safety Inspection Reports
- JHA's

JHA	Email Date	Bill to Court	Action

- Old Business (safety)
- New Business (safety)
- Security
- Submittals - Under review, Outstanding Submittals: None
- RFIs - RFIs under review
- Job Progress and Schedule
- Upcoming safety Concerns/Strategies for Prevention

OSHA Compliance

Aon assists clients with the evaluation and correction of compliance/regulatory requirements specific to identified Standards. We assist with development of written compliance programs, employee training, documentation and will conduct pre-audit assessments of facilities and design regulatory inspection guidelines. We also offer OSHA Outreach 10 and 30 Hour Training in both General Industry and Construction.

Safety Department Assessment

Formal evaluations of safety organizational effectiveness, staffing levels, and skill requirements. Assessments outline current organizational strengths and weaknesses and provide a roadmap for organizational improvement, often including KPIs focused on reduction of workers' compensation costs.

Safety Toolbox

Specifically designed for organizations without a full time safety professional, this process and methodology engages workers to actively promote daily risk reduction activities targeted at the types of incidents driving WC. It is designed to educate, measure and sustain safety and health activities by both managers and worker participants through a series of visits with designated "Safety Champions", progressively expanding the Champions' knowledge base, program maturity and sustainability of the program. Elements address the risk reduction process necessities including:

- Management and worker responsibilities
- One-on-one coaching to engage workers, management and team members
- Safety committee activities
- Self-inspections to identify and correct hazards
- Incident reporting and investigating
- Return-to-work strategies
- Activity and performance metrics to measure sustainability and results

Survey Assessment			1st STB AV	2nd STB AV	3rd STB AV	Self Assessment	4th STB AV	Trend Summary, status, comments, or source of data
Date of Assessment								
MAJOR GOALS	Target	2008 -2012 Avg Results	CYTD	CYTD	CYTD	CYTD	CYTD	
Injury Reporting Lag Time Within 72 Hours	72 Hours	46 hrs	0	0	56			CYTD lag time is trending too high
Safety Committee Meeting	90%	NA	Yellow	Yellow	Green	Green		90% attendance every month. Meeting to be documented and posted in areas. Record to include issues and resolution.
Departmental Self Inspections	100%	NA	Red	Red	Green	Green		Inspections are conducted every month
Corrective Action (from inspections, investigations and outside audits)	100%	NA	Red	Red	Green	Green		CA addressed every 30 days. If unable to fix, develop plan or response.
Ten Basic Guidelines per coordinator (except claims)	40	NA	0	40	40	40		SECs now have written guidelines to coach new employees.
Job Hazard Analysis	4	NA	0	0	0	1		1 JHA per area coordinator per quarter to start after 3rd AV
Assignments for Roles & Responsibilities	100%	NA	65%	75%	100%	100%		6 SEC Coordinators Appointed and 85% Level What to Do

Training and Education

Aon offers training solutions that are flexible and customized to meet the needs of many industries. Training programs can be tailored for all layers of an organization to include upper/middle management, front-line supervisors, fixed base and lone worker employees. Training programs can be performed in-person by one of Aon's consultants or can be offered through an e-learning platform available to Aon clients. Our goal is to provide the most effective resources to clients that increase safety awareness and knowledge of occupational safety and health guidelines.

On-site and Web-based Training

Training performed by Aon's Global Risk Consultants addresses specific hazards found within an organization and the safety techniques/procedures recommended maintain a safe workplace. These services can be delivered on-site or via webinar.

Exposures covered can include regulatory and safety management topics: slip/trip/falls, ergonomics and incident investigation techniques (as examples). In addition, Aon consultants can provide OSHA 10 and 30-hour instruction recognized by the Department of Labor.

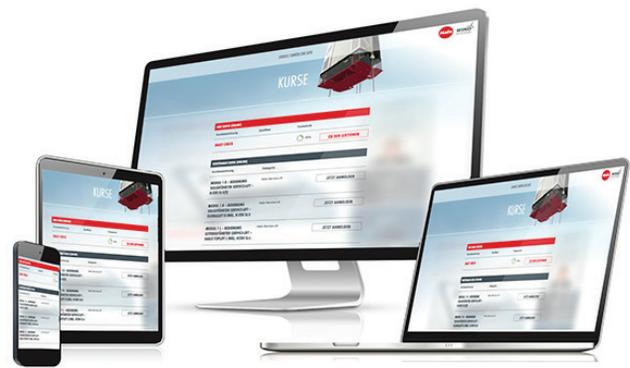
Additionally, Aon provides training for operational supervisors and safety managers to prepare and improve their safety management skills, such as:

- Communicating expectations
- Conducting pre-shift safety observations
- Leading safety discussions
- Hazard recognition and corrective action
- Responding to employee safety concerns
- Conducting incident investigations
- Giving and receiving feedback to reinforce safe behaviors or correct unsafe behaviors

E-Learning Partnership

Aon's strategic partnership with SafetySkills allows us to offer online learning for our clients. Over 500 courses are available encompassing 350 topics available at a reduced fee structure. Many of the courses are available in multiple languages and include customization for US Federal, CalOSHA and Canadian regulations.

Training sessions are self-paced and offered in multiple languages to accommodate the most diverse workforces. The user-friendly platform allows Aon clients to deliver required training via desktop or mobile device anywhere in the world.



Safety Leadership

Safety Culture Improvement—SCI

Aon has made significant investments in processes for analyzing our clients' safety management systems and culture. Our Safety Culture Improvement (SCI) process uses a continual improvement model. Aon's SCI is built around a six-module approach to drive safety management enhancement. These modules include the following:



Assessments and Perception Surveys

Aon conducts perception surveys to obtain feedback on past/current performance and/or information for future direction. Perception surveys can be used far beyond just gathering information. They identify gaps between what is stated, intended and what is practiced; highlight differences between management and employees' understandings; provide an opportunity to connect and involve employees; encourage employees to provide feedback to management; and determine where current programs work and where they fall short of expectations. Aon can design, administer, and correlate data to provide meaningful feedback to the organization.



Introduction & Demographics

This survey will be used to assess the overall level of safety engagement and how employees have within the workplace. This survey is for informational purposes only and your participation will be kept completely confidential.

All of the answers you provide will be combined with others to create a picture of your workplace. Your involvement in completing this short questionnaire is greatly appreciated. Rest assured, your thoughts and perspectives are important and we will take all responses and comments very seriously.

Answer all the questions honestly and objectively as they relate to your own area. Questions that involve supervisors are intended to ask about your supervisor and questions that pertain to management are intended to ask about the highest level of management within your organization.

Please read the following statements and rate your organization:

	Completely Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Completely Agree
The company values safety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employees are just as responsible for safety as the organization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supervisors will make the decision to be safe, even if it impacts production	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employees are aware of required safe work practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employees are expected to stop working if the job is unsafe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employees know how to report unsafe conditions and are encouraged to do so	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supervisors regularly review safe work practices with employees	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employees take pride in their work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The workplace does not create too much pressure that can lead persons to work unsafely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The organization treats employees well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Safety Behavior Observations

Aon will identify leading and lagging metrics associated with operational improvement opportunities within your organization. A behavioral safety implementation is designed to blend into the culture of your organization:

- Coaching and observation process with benchmarks, focus on achievement and positive reinforcement, and establishment of a model of continual improvement
- Data tracking of observation suggestions and advisement of possible solutions
- Improvement solutions based on aggregate results and individual comments from employee perception surveys
- Education encompassing safety leadership, supervisor and employee observation skills, communication techniques and feedback skills
- Metrics tailored and aligned with your organizational objectives

Leadership and Transformational Safety

Aon can assist in diagnosing the current state of safety leadership and develop a roadmap to continually improve senior leadership's role within this effort.

- Evaluation of organizational behavior, ethics and integrity
- Interviews with managers and leaders including assessments of their individual leadership styles
- Establishment of organizational safety charter
- Creation of individual safety development plans
- Creation of a model of transformational leadership leading to a highly reliable organization

ISO 45001 Alignment

Evaluation of current safety management efforts and alignment of activities with ISO 45001 is another service offered by Aon. This service provides clients with a specific gap assessment of the following:

- Safety leadership
- Employee engagement in safety
- Alignment of safety with organizational objectives
- The planning of safety
- The support for safety
- The operations of safety
- The organization of safety
- Performance evaluation metrics and process
- Corrective action tracking and improvement plans

Our consultants will develop action plans to improve the effectiveness of each element and maintain a functional 45001 safety management system.



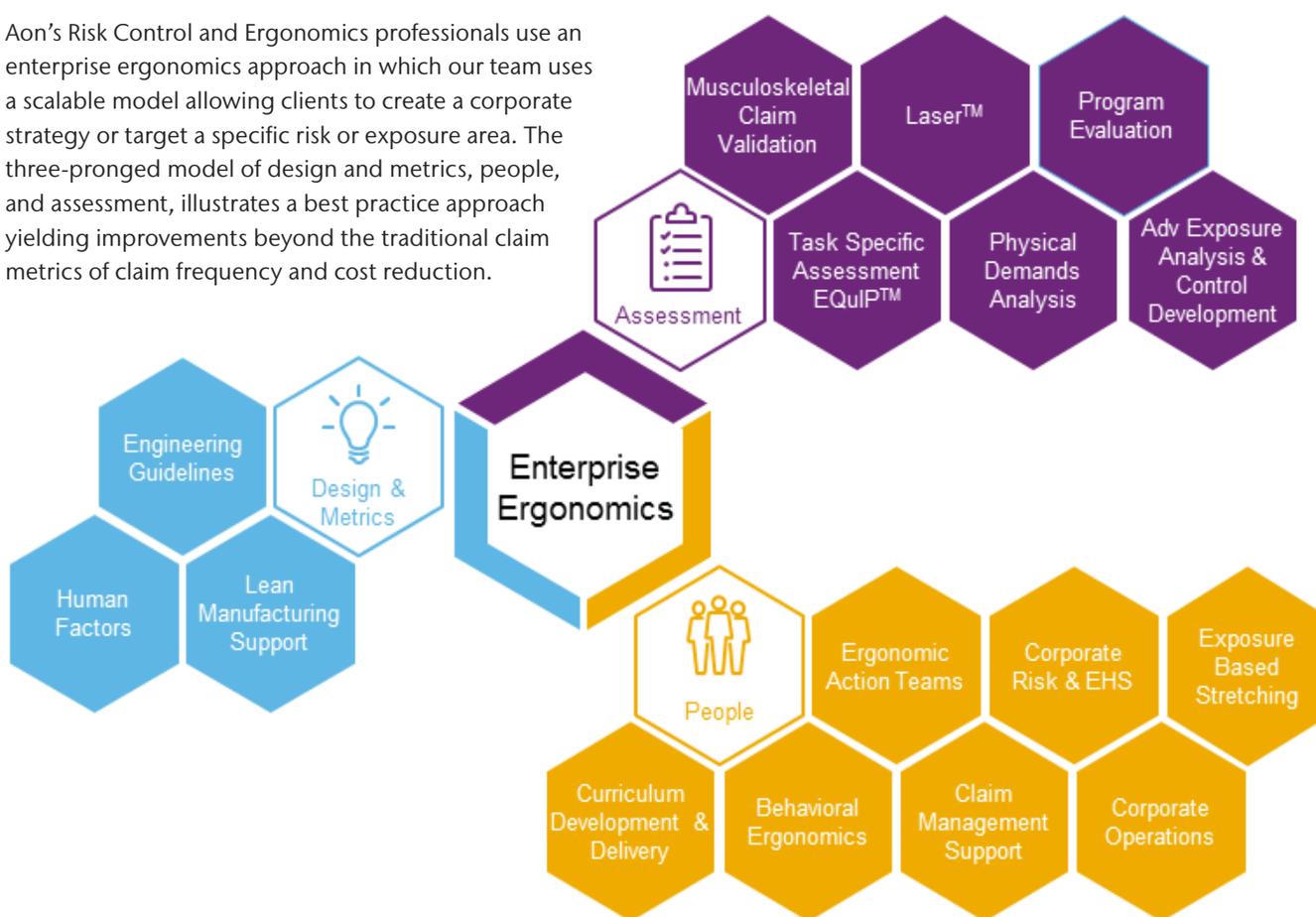
Key Performance Indicators

Key Performance Indicators (KPIs) design for safety accountability—An evaluation of responsibility and accountability systems and the identification of metrics which will sustain improvement within an organization. Our rigorous approach to developing KPIs involves evaluating the operation, identifying the actions and activities that must be undertaken to reduce risk, and working with supervisors to create means of achieving these actions.

Ergonomic Consultation

Ergonomic assistance and program development addresses the specific exposures related to many industries. Areas covered in our best practice model include: ergonomic hazard identification, problem solving teams, standard procedure creation and implementation, behavior observations, post injury claim validation, workstation design analysis, and management-associate ergonomic awareness training.

Aon’s Risk Control and Ergonomics professionals use an enterprise ergonomics approach in which our team uses a scalable model allowing clients to create a corporate strategy or target a specific risk or exposure area. The three-pronged model of design and metrics, people, and assessment, illustrates a best practice approach yielding improvements beyond the traditional claim metrics of claim frequency and cost reduction.



Fact-based Information—Directs Solution and Improves Results

The ability to leverage objective data allows us to guide our clients’ decision-making process related to risk elimination and mitigation. Using technology our ergonomics professionals will leverage facts rather than rely on opinions to guide business decisions. These leading indicators position our industry partners to influence human performance before the claim cycle is engaged.

Assessment

Our industry leading ergonomic team drives client improvement by identifying the vital few physical tasks and activities contributing to the greatest share of TCoR and can assist with the implementation of a variety of pre and post injury solutions. Our Board Certified Professional Ergonomists have extensive experience and will assist organizations to validate ergonomic risk factors and physical demands of a job by using quantified ergonomic exposures using a variety of tools like:

- University of Michigan 3D Static Strength Prediction Program,
- Human CAD Virtual Design and analysis,
- Electromyography (EMG) testing,
- Aon Ergonomic Design Guidelines, and
- EQulP® Ergonomic Quantification and Improvement Process Tool.

EQulP®—Ergonomic Quantification and Improvement Tool

Aon’s ergonomists have assessed risks in nearly every business sector or industry. One of our tools available to quantify the risk is Aon’s proprietary EQulP® evaluation.

This tool is used to validate and quantify ergonomic exposures, provide a platform for the evaluation of potential improvements, and document reduced ergonomics injury risk via rescoring of exposures. EQulP® is a risk factor screening tool that will quantify the exposures of frequency, force and material handling of specific tasks and activities. The tool also has an age-related feature which will automatically re-calculate the risk rating to accommodate for an aging workforce demographic. Once trained in its use, client employees (i.e. safety teams, process leaders) can conduct risk assessments in-house. The assessment output is displayed intuitively and prompts clients to target efforts on solution implementation. This is the next level of ergonomic evaluation and risk quantification for soft-tissue injuries in the workplace.

Ergonomic Quantification and Improvement Process Tool (EQulP™ Tool)

Section I Score Neck: 15, Shoulder: 15, Back: 5, Arm & Elbow: 5, Wrists: 10, Hands: 10, Legs: 10, Static Posture: 10		Greater than 85 = High 45 to 84 = Moderate 44 or Less = Low 80 0		Data EQulP™ Number: S42016 Analyst: # of Workers: 5 Job Location: Division/Site: W/irona		Average age < 46 Average age > 46 No Data Analytically Completed		Ageometrics™ Comments Review risk levels to determine the level of risk for the general population			
Job or Task & Shift Hours Per Shift Department		Over 17 Tower- raised and jack rol Estimate of 8 hours		Division/Site: W/irona		Review risk levels to determine the level of risk for the general population		Clear Section I Clear Section II			

Section I	Force / Posture	Frequency / Duration	Force, Posture, and Frequency Descriptions
Neck Risk Rating: High Score: 15	• Near full bending (> 30°) of neck (forward, backward, or to the side) 	• Slight bending of the neck (< 10°) • Frequency: > 15 per minute (CR) • Duration: > 65% of task cycle in awkward posture 	• Frequency: < 4 per minute (PAND) • Duration: < 35% of task cycle in awkward posture Neck extended up looking at hoist. Look to side at panel (HIGH Posture). Counted 5 to 15 bends in 1 minute.
Shoulder Risk Rating: High Score: 15	• Elbow above shoulder (> 90°) or behind back (> 20°) • Two handed push/pull > 50 lbs • One-arm push/pull force > 25 lbs • Support object weighing > 15 lbs at extended reach (extended reach defined as > 18", measured horizontally, from shoulder) 	• Elbow close to body (< 30°) • One-arm push/pull force < 5 lbs • Support object weighing < 5 lbs at extended reach • Frequency: > 5 per minute (CR) • Duration: > 50% of task cycle in awkward posture 	• Frequency: < 1.5 per minute (PAND) • Duration: < 15% of task cycle in awkward posture Reach above shoulder height for straps (6 setup, 1 pull, 2 hang straps, panel is at shoulder height 30 seconds) Cutting (2 and taping (3) shoulder height estimate 2.5 / minute Duration estimate might be best
Back Risk Rating: Low Score: 5	• Forward bending or twisting > 60° • Side bending > 30° • Two handed push/pull force > 50 lbs 	• Forward bending < 20° • Twisting < 15° • Side bending < 10° • Two-handed push or pull force < 20 lbs with neutral back postures • Frequency: > 3 per minute (CR) • Duration: > 50% of task cycle in awkward posture 	• Frequency: < 1 per minute (PAND) • Duration: < 15% of task cycle in awkward posture Bend to pull straps, grab hoist control from box, place saddles in boxes. Estimate about 6 bends in 15 minutes
Arm & Elbow Risk Rating: Low Score: 5	• Foreful or full (> 60°) rotation of forearm, forearm wrist bending, or forearm grasping with the arm fully extended • One-arm push/pull = 25 lbs • High levels of hand-tool vibration (heavy air gun, chainsaw, jackhammer) or heavy manual hammering • Contact stress to the elbow or arm 	• Easy, smooth extension of arm (70° to 110° elbow bend, elbow < 30° from body) • Wrist bending or rotation of forearm requiring little effort • No exposure to hand-tool vibration • No significant contact stress to the arms • Frequency: > 8 per minute (CR) • Duration: > 66% of task cycle in awkward posture (CR) • Using vibrating power tool for more than 2 hours per shift 	• Frequency: < 4 per minute (PAND) • Duration: < 35% of task cycle in awkward posture (PAND) • Occasional use of power tools (15 minutes or less per shift)

The EQulP® is specifically designed for individuals or teams with limited formal training and exposure to ergonomics, and promotes practical field experience. Results include:

- A focus on root cause and solution development
- Ability for staff to conduct consistent evaluations for a variety of locations, departments and tasks
- Consistency in comparing job tasks and exposures in a concise and orderly format
- Ability to prioritize resources for improvement projects
- Identification of age-related priority for organizations with an aging workforce
- Assistance in solution implementation

3D Modeling

Aon's use of 3D modeling software allows our consultants to estimate risk of injury based on the physical components of the task and the individual. This data is essential for determining the application of resources in the pre-injury phase.

Modeling also allows our consultants to provide a visual representation and relative risk of future solution options with limited capital expense. This service also supports ergonomic review in the design-phase lowering costs associated with injury and retrofit of the work area following claims or complaints.

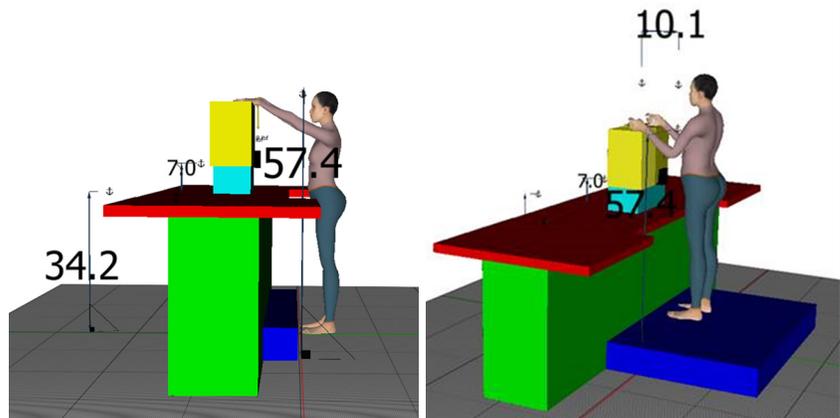


Figure 1: At Risk State

Figure 2: Improved State

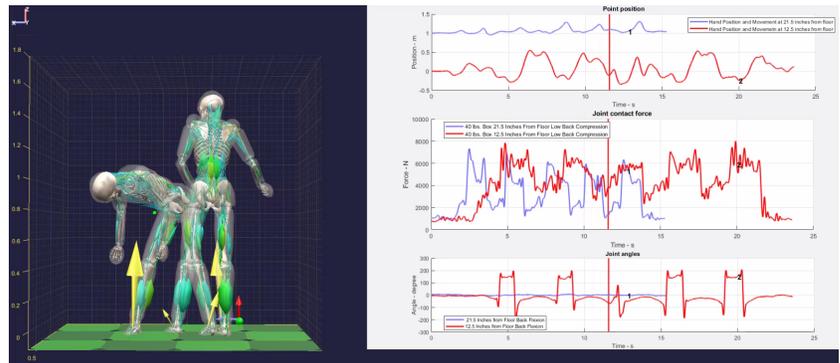


Figure 3: Comparative Modeling of Manual Material Handling Task

Dynamic Muscle Force Based Measurement Equipment

Dynamic force based measurement equipment can be used to collect force information on the various muscle groups while performing normal work activities. As muscles contract, microvolt level electrical signals are created within the muscle can be measured from the surface of the body. This process of measuring muscle activity from the skin is referred to as surface electromyography (sEMG). Surface electromyography allows our team of ergonomists a method to collect data with improved accuracy and precision. Data collected by sEMG includes:

- Average muscle force levels,
- Peak muscle exertions,
- Where in a task these forces occur,
- Overall muscle effort, and
- Potential localized muscle fatigue analysis.

For decades sEMG has been used in laboratory settings to provide this information, however recent advances in technology have made real world sEMG measurement more practical. Aon's team of Certified Professional Ergonomists can apply sEMG, goniometry, and three dimension biomechanical analysis to a variety of job tasks producing the information necessary to drive solution development and reduce risk of injury. The application of this technology allows clients to identify and prioritize the critical activities in need of ergonomic improvement, provide information to make business decisions regarding ergonomic redesign.

Wearable Technology Produces Objective Data



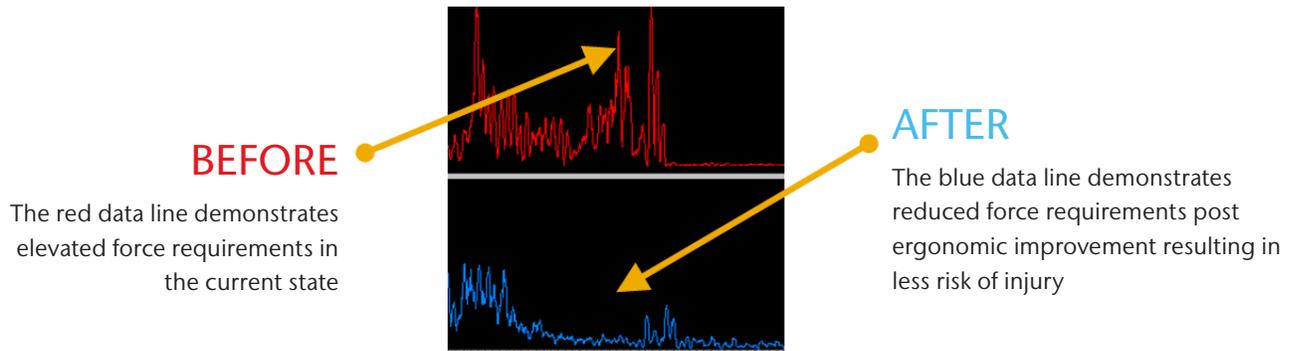
Real time data on muscle force, repetition, and posture



Real time data on proposed solutions provides insight into risk reduction essential to identifying the best go forward options



Measurement of risk according to specific physical tasks allows practitioners to pinpoint hazards and prioritize solution development



Advanced Exposure Analysis and Mitigation

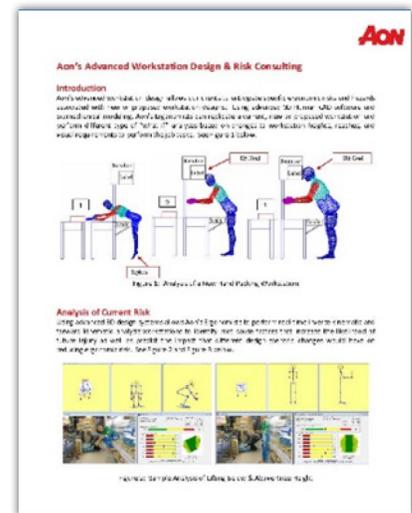
We apply specific tools and problem-solving methods to quantify existing risk factors and provide solutions to reduce the risk for musculoskeletal injury.

Tools available include:

- NIOSH Lifting Equation
- Maximum Acceptable Weights and Forces (Liberty Mutual Snook Tables)
- 3D Static Strength Prediction Program
- Strain Index
- Electromyography (EMG)
- HumanCAD

Methods include:

- Continuous improvement models – Define, assess, implement, monitor, control
- Six – sigma and statistical analysis
- Kaizen events
- 5S
- Time and motion studies
- Client-specific quality programs



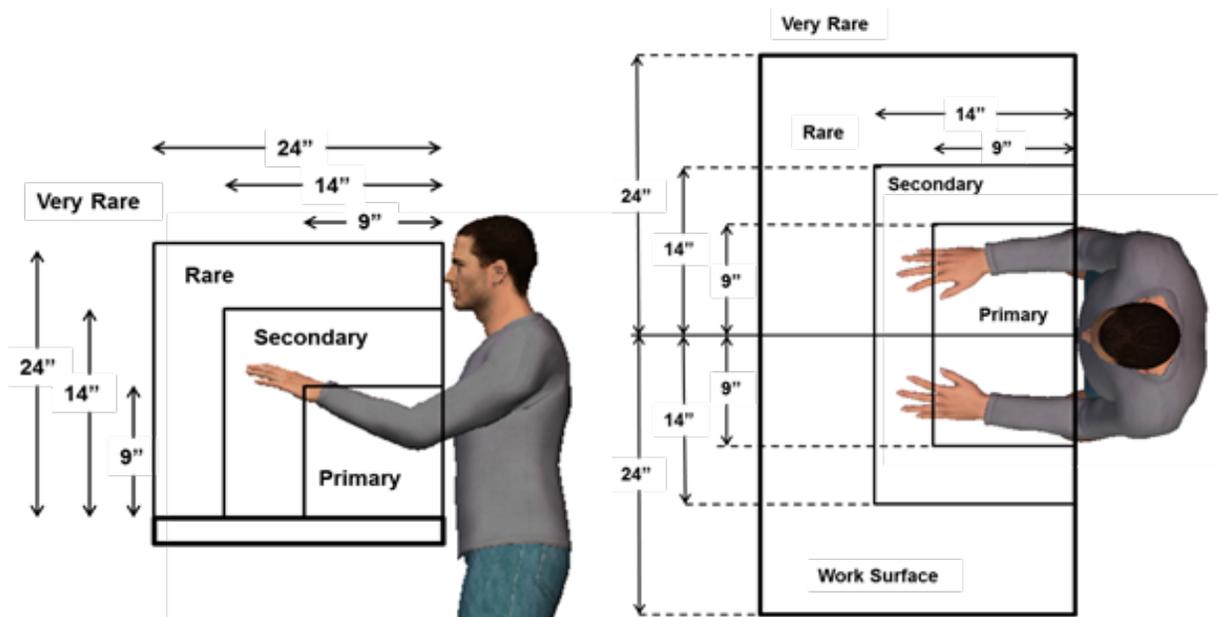
Design & Metrics

Ergonomic Design Guidelines and Engineer Training

Aon has developed documented parameters for application when retrofitting or designing new processes or tasks. Combined with training for manufacturing engineers, this information is used during the planning and design phases of projects to explore options available to eliminate or minimize risk factors. Parameters include anthropometric (physiological, gender, and population percentile) data points to consider like:

Work Sampling Analysis Process for Reach Zones

	Optimal Design Criteria	Design Guideline	Design Goal	Right Hand Observations	Left Hand Observations
1	Primary Reach Zone Both vertical and horizontal measures for left and right hands	≤ 9 inches (22.86 cm)	>50%		
2	Secondary Reach Zone Both vertical and horizontal measures for left and right hands	9 to ≤14 inches (22.8 to 35.5 cm)	<30%		
3	Rare Reach Zone Both vertical and horizontal measures for left and right hands	>14 ≤ 24 inches (38 to 61cm)	<15%		
4	Very Rare Reach Zone Both vertical and horizontal measures for left and right hands	>24 inches (>61cm)	<5%		



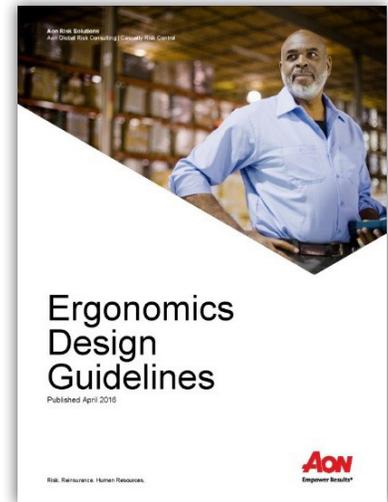
Lean Manufacturing Support and Optimizing Human Performance

Aon integrates ergonomics into Kaizen events with the objective to positively impact overall operational human performance of a manufacturing system that relies on workers to perform the majority of tasks. This approach addresses:

- Safety metrics
- Productivity goals
- Quality enhancements

Common types of projects:

- Ergonomic accelerated improvement concept and workshops
- Ergonomic subject expert training (Supports 3P Kaizen Process)
- Site-wide risk assessments, risk prioritization mapping and solution development
- Ergonomics engineering assessment with productivity measurement impacts



Process Improvement for Productivity and Ergonomics (PIPE) Analysis Tool

Solution Section	TMU Values for Ergonomics Risk Factor Reduction													Total Time Saved (TMU)	Total Time Saved per Solution (Secs.)
	Hands		Elbow / Shoulders			Neck		Back			Legs				
Recommendations	Tool Use Elimination (60)	Get or Regrasp (30)	Arm Turning (60)	Reach 9"-14" (10)	Reach 15" - 24" (16)	Reach > 24" (24)	Neck Any > 20" (20)	Sit (32)	Stand (42)	Back > 30° (32)	Stoop or Kneel (60)	Walking Steps (16)			
1 Reduce reach across table						4								96	3.5
2 Install "U" shaped workbench								1	1					74	2.7
3 Place product stop on table						1		1	1	1		18		418	15.0
4 Use electric wire cutter/stripper	10	40		10								10		2060	74.1
Total Time Saved (TMU)													2648		
														/27.8	
Total Time Saved (Secs.)													95.3		
Total Time Saved (Minutes)													1.6		

Job Safety Analysis

A job safety analysis can be defined as the systemic approach to evaluating a job, determining the safe work practices that must be followed to complete the job in the lowest risk state possible; and delineating these steps in a chronological manner. Our methodology includes:

1. Working with a cross-functional team to identify the risks associated with the job,
2. Conducting a risk assessment to prioritize those hazards that present the greatest risk and exceed the organizational appetite for risk,
3. Developing the safe work practices and how they are to be achieved, and
4. Re-scoring the risk assessment to determine the amount of risk reduction that has been achieved.

JSA's are a validated safety fundamental that, when executed properly, creates high-achieving safety performance.

People

Our clients’ businesses are organized in a variety of ways – centralized, decentralized, with minimal or direct oversight. Regardless of the structure, many functional roles exist and resources are needed to execute and fulfill the defined objectives. The mitigation of ergonomic-related incidents is no different as a diverse range of skill sets are required to accomplish the overarching goals of a pre- and post-loss strategy.

Aon’s Casualty Risk Control consultants work with clients to customize action plans and complete the defined strategies. Our team provides customized communication campaigns, creates and delivers training program materials with supporting documentation, conducts claim validation studies and builds a framework for integrated occupational/non-occupational programs which include elements for employee well-being and aging worker demographics.

Return to Work Programs—RTW

Aon delivers a comprehensive solution to assess existing practices and implement best practices which increase the effectiveness of an organization’s Return to Work program and coordination of key overlapping triggers. Policies, procedures and practices are reviewed and enhanced to align corporate strategies related to injury management and industry best practices which support operational production and compliance in an effective manner. The framework also assesses overlapping triggers for STD, LTD, FMLA, ADAA and LOA considerations. Incorporation of documented Physical Demands Analyses (previously identified) produces best in class Transitional Duty Programs.

Musculoskeletal Claim Validation—MCV

A claim-specific assessment comparing a MSD injury to specific task demands; the purpose of which is to determine whether the task requirements contributed to the reported claim. A report is provided to the claim examiner and client WC claim manager, and typically fees are applied to the claim file. All MCV studies are completed by Certified Professional Ergonomists, and expert testimony may be provided where required.

Physical Demand Analysis—PDA

A PDA measures and documents job-specific elements such as lifting, carrying, pushing, pulling, hand and arm forces, and whole-body postures for job families within an organization. By accurately identifying and assessing physical demands, employers can expedite return to work for injured employees through better job matching of worker capabilities, set up physical capacity testing protocols, properly train new hires, and target potentially high-risk tasks.

2) Push and Pull

2-A) Obtain Pallets for Order
Essential Function

- Selectors – Most pull pallets off of stacks, onto the floor to place them on the forks of the pallet jack.
- Pushing forces measured:
 - Blue pallet = 42.5 pounds of force
 - Orange pallet = 22.5 pounds of force
- Push heights will vary based on the height of the stack and range from 5’ to approximately 6’.
- In total, moving of pallets occurs for less than 15 minutes per shift, or infrequently.

2-B) Operate Pallet Jacks
Essential Function

- Steering the pallet jack when making turns requires up to 30 pounds of push and pull forces while leaning on the steering control using the body weight. The handle height is at approximately 36 inches. This push/pull force occurs for up to 2 hours in total throughout the workday, when making turns around aisles.

2-C) Select Product for Orders
Essential Function

- Pushing cases across other cases or pallets results in varying forces, depending on the weight of the object and the case contents. Sample pushing forces are:
 - 20.0 lbf for a 32-pound case
 - 30.0 to 31.5 lbf for 40-pound case
 - 51.0 to 60.0 lbf for 80-pound case
- Pushing occurs with an outward reach up to 33 inches, with bending at the waist and leaning forward to assist with the reach.
- The height of the push varies based on the load height, between approximately 8 inches and approximately 60 inches.
- The amount of time spent pushing product across other products is less than 1 hour in total per shift, as it does not occur for every pick.

Force	Push					Pull				
	Never 0 hrs	Infrequent < 1 hr	Occasional 1-3 hrs	Frequent 3-6 hrs	Constant 6-8 hrs	Never 0 hrs	Infrequent < 1 hr	Occasional 1-3 hrs	Frequent 3-6 hrs	Constant 6-8 hrs
0 – 10 lbs		X								X
11 – 25 lbs			X							X
26 – 50 lbs				X						X
51 – 75 lbs					X					X
76 – 100 lbs	X									X
100 + lbs	X									X

3) Hand and Arm Force

3-A) Obtain Pallets for Order
Essential Function

- Grasping pallets requires whole hand grips and wrist bending.
- A one-armed pull may also be used when removing a pallet from the pallet stack.
- The amount of time handling pallets is up to 15 minutes throughout the shift.

3-B) Operate Pallet Jack
Essential Function

- Whole hand grips are used to operate the steering throttle and finger pressing is used to depress controls on the pallet jack. Wrist bending may occur during the task.
- Up to 6 hours per day may be spent grasping the throttle, both while standing on the jack as well as walking beside it.

3-C) Select Product for Orders
Essential Function

- Product is taken from the racks and transferred to the pallet with whole hand grasps and pinch grips, depending on the product. The amount of time handling product is up to 4 hours in total throughout the shift.
- Some one-arm pulling may occur when moving product toward the Selector and when arranging product on pallets.
- Plastic sheets are used to separate certain products from each other, to prevent leaking one product to another, and to separate allergens. Pinch grips are used while handling this plastic sheet, for less than 30 minutes total per shift.
- Up to 4 hours total is spent grasping product with the hands, when lifting and carrying product. Wrist bending may occur during these tasks.

3-D) Wrap Pallets
Essential Function

- Pallets are hand-wrapped to secure the load, using whole hand grips as well as pinch grips.
- Wrist bending may occur during this task.
- Up to 30 minutes per shift may be spent wrapping pallets.

Force Type	Never 0 hrs	Infrequent < 1 hr	Occasional 1-3 hrs	Frequent 3-6 hrs	Constant 6-8 hrs
Use of Hands					X
Computer Use		X			
Hand Grip (fingers opposing base of hand)					X
Pinch Grip (fingers opposing thumb)			X		
Bending of the Wrist				X	
Push or pull (using 1 arm)		X			
Sliding with Hand	X				
Press with Fingers			X		

Workplace Stretching Program

Aon Deck is a dynamic, responsive stretching program that is customized for the tasks and physical demands of your workplace. Unlike other stretching programs which can repeat the same stretches regardless of the job tasks, and which remain static, Aon Deck is designed and delivered in a format that is flexible, allowing for quick updates to stretching routines as tasks, work areas and/or injury trends change. By first completing ergonomic assessments for selected jobs within the workplace, each stretching routine can be customized for that specific job.

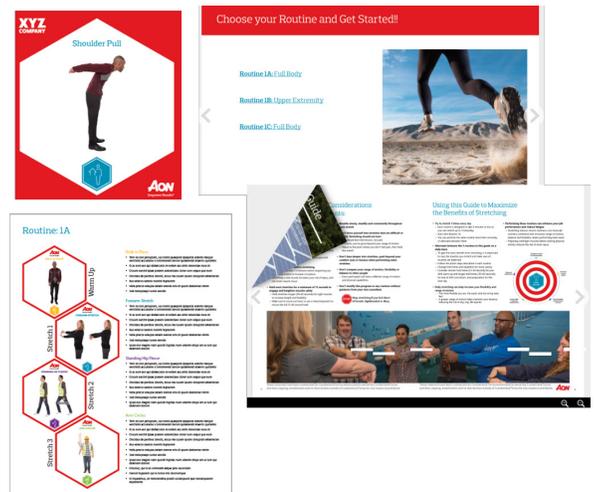
Our program includes a set of warm up activities, as well as a mix of dynamic and static stretches for the upper and lower body. Specific stretches are selected from the deck based on ergonomic exposures, and built into routines by the Aon team. Once the program is implemented, daily stretching sessions are led by peer “Stretching Champions.” Prior to program roll out, Champions are trained by Aon Consultants to help them understand:

- The benefits of stretching,
- How to modify stretches for those with limited flexibility,
- How to lead stretching sessions, and
- How to respond to questions or concerns about participation



Aon Deck includes everything your organization needs to develop and implement a workplace stretching program. In addition to the routines, all support materials are customized to fit into your workplace and delivered in a format that works for your employees. Support materials can include:

- Deck of stretching cards
- Champs chart with customized routines
- Program guide for management and champions
- Online or print e-field guide for participants and champions
- Participant poster or page

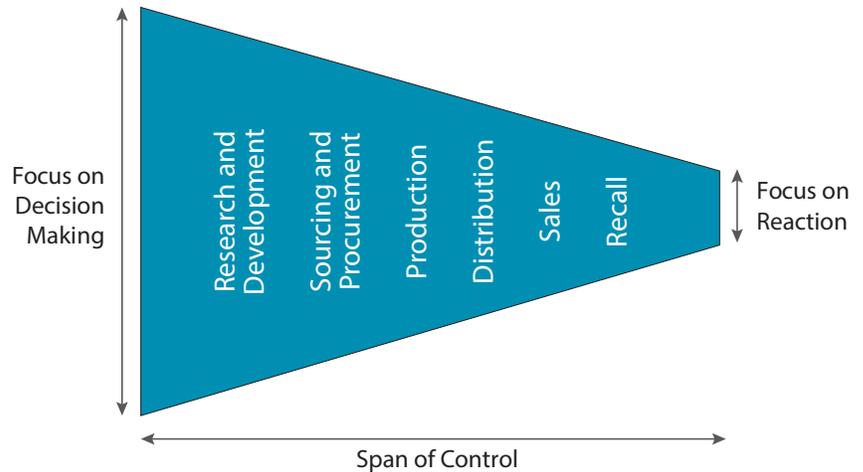


General Liability & Product Liability

Product Risk Management Assessments

Aon’s approach to product risk management is based on a deep understanding of product development, quality management and contract risk management and the associated interrelationships. Our proprietary assessment encompasses evaluation of 15 phases of the product life cycle. The benefits of implementing Aon’s PRM approach include:

- Evaluating product liability risks across the entire lifecycle
- Assessing the maturity of current systems and controls
- Incorporating best practices tailored to an organization’s unique circumstances
- Demonstrating the effectiveness of product safety programs to key stakeholders
- Optimizing the risk financing of product liability exposures



For clients engaged in the manufacturing, distribution or serving of food and beverage products, the service can be tailored.

Aon’s PRM™ Approach: Product Life Cycle

Product Risk Management		Client		
Phase	Life Cycle	Total Score	Maximum Score	Percentage
A	Management System	21	30	70
B	Research	30	40	75
C	Product Development	55	60	92
D	Sourcing & Procurement	40	70	57
E	Production	25	40	63
F	Quality Assurance & Labeling	55	100	55
G	Regulatory Compliance	35	50	70
H	Warehousing & Distribution	50	60	83
I	Sales & Marketing	64	80	80
J	Contract Risk Management	32	60	53
K	Service Delivery	50	80	63
L	Product Use & Recall	28	80	35
M	Event & Compliant Monitoring	44	50	88
N	Product Stewardship & Disposal	20	40	50
O	Documentation & Audit	35	80	44
Total Score		584	920	63

- Over 80%**
Largely optimized risk management program
- 65-80%**
Structured program still requiring some further enhancements
- 50-65%**
Program requires improvement action plans
- Less than 50%**
Significant deficiencies prioritized action to establish program

Fleet Safety Services

Whether clients have regulated fleets, owned vehicles, and/or significant non-owned fleets, the pressure to control exposures and contain losses is great. Aon's suite of services is designed to assist clients in controlling these costs and includes benchmarking, program assessment, policy and procedure development, and metrics to measure improvements.

Custom Aon Solutions

Our team offers a spectrum of services that will help to reduce crashes; mitigate injury exposures; ensure driver compliance with regulations and best practices; and optimize fleet operations.

- Driver selection & evaluation
- Driver improvement training
- Fleet management gap assessment (regulated and non-regulated fleets)
- High-risk driver management and improvement
- Driver/fleet safety culture
- Leverage technology and telematics
- Driver ergonomics
- Supervisor training and coaching for improvement
- Motor vehicle safety task force
- Dashboard and metrics reporting
- Driver handbook development

Driver Selection and Evaluation

If vehicle operation constitutes a significant portion of a job role, management must establish standardized methods to address the following areas:

- Determine whether the driver has a valid driver's license;
- Ensure that the employee is qualified to operate the specific type of vehicle;
- Review the employee's knowledge of vehicle operation and safe driving techniques;
- Review the driver's Motor Vehicle Record (MVR);
- Review past driving performance and work experience through previous employer reference checks.

Aon's Fleet Operational Assessment tools provide in-depth evaluation of a client's vehicle safety management controls. The Fleet Management Risk Assessment targets non-regulated fleets while the Federal Motor Carrier Safety Administration (FMCSA) Gap Assessment targets regulated fleets.

Fleet Management Gap Assessment/Non-Regulated Fleet

The assessments validate current state of safety controls and results are utilized to develop strategies to create a program that meets best practices outlined by ANSI/ASSE Z 15.1 2017 "Safe Practices for Motor Vehicle Operation" and FMCSA Safety Management Cycle.

By establishing a Fleet Management Risk Assessment Strategic Action Plan, your organization can:

1. Gain commitment from top management to support increased fleet safety accountability throughout the sales organization.
2. Reduce preventable accidents and average claim cost by 10% by establishing the following safety initiatives:
 - a. Increase accountability for driving safely through in-vehicle safety observations by sales manager 2X per year
 - b. Establish high risk driver intervention that includes coaching by manager and targeted training
 - c. Establish scorecard that tracks motor vehicle collision by region, training program completion, and percentage of completed in-vehicle safety observations.

FMCSA Gap Assessment/Regulatory Compliance

The FMCSA (Federal Motor Carrier Safety Administration) Gap Assessment evaluates fleet safety management practices and adequacy of driver safety measures for our clients with regulated fleets. The results of the assessment are used to develop focused improvement strategies that strengthen FMCSA compliance systems, reduce potential costs associated with fines due to deficient FMCSA records and roadside inspections, and strengthen best practices in fleet safety management to reduce loss costs associated with loss of reputation, liability arising from vehicle collisions.

For additional details on Aon's Fleet safety consulting, see [Aon Solutions for Automobile Liability and Fleet-Related Exposures](#).

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About Aon

Aon plc (NYSE:AON) is a leading global professional services firm providing a broad range of risk, retirement and health solutions. Our 50,000 colleagues in 120 countries empower results for clients by using proprietary data and analytics to deliver insights that reduce volatility and improve performance.

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www.aon.com

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The AON logo is displayed in white, bold, uppercase letters against a dark blue background. The letters are spaced out and have a clean, sans-serif font.