

CRASH!

Calculating Risk Associated with Safety and Health

Facilitators Guide

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CRASH!

INTRODUCTION TO CRASH!

CRASH is an interactive experiential learning tool, a “Safety and Prevention” game that provides teen and adult participants the resources, knowledge and motivation to create safer workers and workplaces. Different from other business/management simulations, the CRASH simulation is specifically designed to address issues of health and safety in the workplace. While common business principals are introduced, the main focus is on effective risk management as a strategy for successful business operation.

Ultimately, the CRASH simulation serves to broaden participants’ understanding of workplace risk and underscore the importance of prevention, both for individuals and businesses. Using a “hands on” methodology it creates an immersive experience where participants can learn first-hand how investments in health and safety positively impact business profitability, worker morale, and customer relations.

JUSTIFICATION

General workplace safety education often occurs at the point of employment via a short video or written manual. During that time, employees are inundated with all sorts of new information, forms to fill out and responsibilities to assume. It is no wonder that 110 workers in our state are killed yearly and over 200,000 employees report injury/illness in the workplace. Teens are particularly vulnerable as they have little exposure to the world of work. According to the 2009 Competitiveness Redbook, WA state ranks 3rd in the nation in accidents and injuries per 100 workers. Moreover, injury rates for teenagers are 2-3 times higher than they are for working adults (Washington Department of Labor and Industries).

While many workplace safety projects focus specifically on knowledge and enforcement, few focus on helping employees and employers accept the importance of prevention. Health and safety training is most successful if prevention is part of the “attitude” and “culture” of a workplace. In order to reduce the number of workplace accidents, illnesses and injuries, employers and employees must be 1) aware of common occurrences, 2) educated on prevention strategies, and 3) motivated to take proactive measures to protect themselves and their organization.

PARTICIPANT OUTCOMES

CRASH teaches teens & adults about preventing accidents, illnesses and work related injuries and the associated costs/benefits from the viewpoints of employees, employers and state regulatory agencies. Participants will walk away from the simulation with the following outcomes:

- Increased awareness of common accidents, injuries, illnesses and their causes
- Increased knowledge of prevention strategies and their relative effectiveness
- Increased willingness to abide by safety standards, rules and regulations and build awareness for the government agencies regulating workplace safety
- Increased understanding of worker rights
- Increased understanding of the costs and benefits to business managers and owners associated with investments in workplace safety

SIMULATION DESIGN

The CRASH simulation uses a board game format, accommodating 4-6 participants per board, and up to 100 participants per session. A trained facilitator supports play and helps guide the experience to ensure that anticipated learning outcomes are achieved. Each management team will make financial decisions for 12 months of business operation. Beyond basic operating costs, teams will determine the size and scope of their investments in health and safety activities – given limited resources. For every quarter of play, teams will have the opportunity to recalibrate their prevention strategy based on their growing understanding of risk management. Following are some unique elements of the simulation design:

Experiential: Just memorizing information is useful, but it has been proven that learning through discovery, using information in a way that stirs up emotions, decision making and problem solving, is truly a model for changing attitudes and behaviors. It is often referred to as “experiential” or “discovery learning”, and it works. Simulated activities and games are safer than the real thing (drivers education & flight simulations), can be fun (computer & board games) and offer a “learn-by-doing” effect that surpasses other modes of learning. Add a little competition and extreme variables, and the audience becomes engaged beyond those passively watching videos or listening to lectures. The CRASH simulation leaves a lasting impression by allowing participants to navigate the unforeseen challenges, hazards and financial decisions of the typical workplace.

Realistic: The CRASH simulation design is entirely informed by topical data collected from the Washington Department of Labor and Industries, survey data collected from more than 200 WA businesses, and industry specialists. The objective of this research was to ensure that risk, rewards, and consequences are represented realistically and with the appropriate magnitude of impact.

Easy to Facilitate: CRASH has been intentionally designed to allow anyone to be able to facilitate game activities. This training manual assumes that the facilitator comes to the game with little prior background knowledge regarding health and safety in the workplace. Every attempt has been made to provide simple and easy to administer instructions for setting up board games, getting teams started, facilitating large group debriefing, and administering follow-up activities.

Portable and Scalable: The CRASH simulation operates as a stand-alone activity that can be delivered in a variety of settings to broad range of audiences. The game has been tested with both high school aged youth and adult populations. Additionally, the board game design allows for portability and can be played without electronic equipment or the need for a power source. This is particularly important for school settings where access to computers and other equipment can sometimes be challenging. The simulation is also scalable in terms of length of delivery – ideally facilitated in a 2-3 hour time frame, but flexible to meet participant needs.

BACKGROUND

Who is impacted in workplace health and safety?

- Workers
- Employers
- Local and Federal Government
- Tax Payers

How do health and safety impact business success?

- Productivity – employees out of work, loss of trained staff
- Employee morale – also impacting productivity, unhappy workers
- Insurance premiums – workers compensation rates go up for risky employers
- Business competitiveness – businesses are commonly evaluated for their health and safety record before receiving lucrative government contracts
- Company reputation – businesses gain an unfavorable reputation for poor health and safety standards making it more difficult to hire talented employees – also impacts customer perception

Why do we care about health and safety?

- Nationally, nearly 50 workers are injured every minute of the work week
- 17 workers die on-the-job each day
- Workplace injuries will cost society \$170 million in losses each year
- More than \$40 billion is paid each year by employers for workers compensation – roughly \$500 for every employee
- In Washington State, some of our riskiest businesses pay up to \$14 per employee **per hour** for workers compensation insurance (logging is a good example).
- Businesses with good health and safety records pay less in worker compensation than those who don't.
- Inexperienced employees are twice as likely to be injured than experienced employees

So, knowing all this, how do we promote health and safety for our business?

Hierarchy of risk management “controls” (In order of effectiveness):

- 1) **Eliminate** threat – example: replace faulty machinery (most effective, but also often most expensive)
- 2) **Reduce** threat – example: policies that limit exposure to faulty machinery
- 3) **Protect** in the event that threat occurs – example: training or personal protective equipment (least effective, but also often least expensive)

How is Workers Compensation Premium Calculated? (Important for playing the game)

Generally, workers compensation is calculated using two inputs: the average risk of the industry called a “base rate” and the average risk of the business or firm often called an “experience rate.” The important thing to know here is that a business owner (or corporation) can reduce the base rate by demonstrating higher than average safety in their business practices, translated here as a high experience rating. This can represent significant savings to business.

- **Premium Rate** (paid quarterly) = Base Rate + Experience Rate. Ex. 2,000 hours worked by all employees x (.41 base rate + .20 experience adjustment) = \$1,220
- **Base rate** is calculated based on risk classification (actually much more complicated than this, but we will simplify for game purposes)
- **Experience Rate** predicts how much better or worse the firm's claim costs are likely to be in the future – adjusts the base rate up or down.

SET-UP

ROOM SET-UP

4-6 participants per team (per board)
One table for each team, chairs surrounding
Facilitator at the front of room

GAME MATERIALS/SUPPLIES

Board (1) – laminated to allow use of wet erase markers

Incident Cards (3 sets per board) – one set of incident cards for each department (each set is labeled and color coded to match one of the three departments), placed face down on board in the areas indicated

Monthly Incident Reports – these are the half page quarterly and monthly reports that indicate how many incidents happened in each department for each month. Can be set up like a mini-flip chart or simply a pile of cards face down (placed in the correct order of months)

Risk Reports (3) – one for each department (each report is labeled and color coded to match one of the three departments)

Wet Erase Markers (4) – one for each department and finance team

Pens (3) – one for each department

Calculator (1) – for the finance team

Dice (1) – one for each board

Clear Plastic Cups (4) – labeled experienced, inexperienced, temporary, and fish

Beads (4 colors) – 20 experienced, 20 inexperienced, 10 temporary, 80 fish

BOARD SET-UP

- Place 1 pen and 1 wet erase marker at each department
- Place 15 fish beads in the area labeled “incoming fish” in the Fishing Boat and Warehouse departments (leave sales empty to start)
- Place 3 experienced employees and 2 inexperienced employees (on the lines designated) in each of the departments
- Place incident cards face down in each of the corresponding departments
- Place Risk Reports in the corresponding departments
- Place the Monthly Incident Reports to the side of the board (in order), starting on first page labeled Quarter 1 (only one page should be viewed at a time)
- Remaining beads should be placed in labeled plastic cups to the side of the board
- Place the dice and calculator to the side of the board

PLAY

INTRODUCE THE GAME SCENARIO AND FINANCIAL VARIABLES

- Your team has just purchased a fishing company with three departments:
 - 1) **Fishing Boat:** catch fish
 - 2) **Processing Warehouse:** package fish
 - 3) **Sales Office:** sell fish
- Each “Fish Unit” represents 1,000 pounds of fish
- Your team will operate the fishing company for 12 months (4 financial quarters)
- How to Win??? You will be given a score based on your ability to:
 - 1) Maintain the health and safety of your employees
 - 2) Maintain profitability
- Your goal is to move “fish units” from the fishing boat to the processing warehouse then out through the sales office. Each fish unit making it to the sales office turns into company revenue (indicate color of the bead used for each fish unit)
- Each department can have up to 6 employees and each employee can only move a certain number of fish units each month (reference first page of the Monthly Incident Reports - production ratios are listed on the first page labeled Quarter 1 and referenced after each Quarter of play). Your team will be able to choose the experience level of each staff member (hold up the colored beads that correspond to experienced and inexperienced employees)
- Throughout the game, your team will control two management decisions that will impact your success as a company:
 - 1) How your departments are staffed (how many and experience level), and
 - 2) How safe employees are in their work environment (investments in health and safety)

INTRODUCE HOW TO PLAY THE GAME

First - Make quarterly decisions for each department, there are two:

- 1) Make initial health and safety investments on Risk Reports (already set for Quarter 1) - see “management decisions” below to learn more about health and safety investments.
- 2) Set your staffing (already set for Quarter 1) - see “management decisions” below to learn more about staffing.

Remember these cannot be changed until the next quarter (just once every three months of play)

Second - Play three rounds (months) of operation:

Flip to the Incident Calendar to January and follow the next six steps

- 1) ***Pull cards:*** Pull the number of incident cards indicated for each department. The incident cards are based on the real world – meaning certain incidents are represented more than others in the deck, and some will have more severe consequences than others. Read the entire card and follow instructions. If an incident was not avoided, the card will direct the team to roll the dice to determine who is impacted, an experienced employee or an inexperienced employee. This matters because inexperienced employees are more prone to incidents, often with longer recovery.
- 2) ***Adjust Staffing:*** Remove any sick or injured staff as indicated on cards (move to the line labeled sick/injured) and replace with temporary staff if desired. Temp employees can ONLY replace sick or injured staff. You may want to note the month that employees return in the boxes below each sick/injured employee.
- 3) ***Move Fish:*** Move fish from one department to the next – you can only move as many fish units as the next department has staff to accept (based on the number of healthy employees and the production ratio for the quarter).
- 4) ***Record:*** Record incidents on each department’s Risk Report. Document revenue for the quarter in the Sales Office Box.
- 5) ***Return Eligible Staff for Next Month:*** Any staff eligible to return to work in the next month should be returned before the next round of play.
- 6) ***Repeat for Month’s 2 & 3***

Third – Complete the financial analysis for Quarter 1 in the Financial Reporting Section.

Fourth – Make second quarter health/safety investments and staffing decisions – instructions below. This will be the first quarter that teams will make their own management decisions: Decision #1) Safety Investments, Decision #2: Staffing

Fifth – *Repeat all steps above for quarter’s 2, 3, and 4.*

MAKE MANAGEMENT DECISION #1: SAFETY INVESTMENTS

- Each department has a Health and Safety Report that identifies the top 7 threats to health and safety for that department. Some items on the list represent more of a threat (both in terms of frequency and severity of incidents) than others.
- The health and safety report also suggests two levels of intervention (or controls), including:
 - 1) **Employee Controls:** interventions centering around the employee, like training or personal protective equipment
 - 2) **Workplace Controls:** interventions centering around the source of workplace risk - designed to eliminate, isolate or reduce potential threats
- So, your department has four options for addressing each of the listed threats:
 - 1) No intervention – not seen to be a threat
 - 2) Employee controls – low threat controlled by training or personal protective equipment
 - 3) Workplace controls – high threat requiring full intervention
 - 4) Employee and Workplace controls – in some cases both levels of intervention may be required
- Your company has \$150,000 of reserve funding to start – \$50,000 has already been allocated for your Q1 investments (your team will make all future investment decisions starting in Q2). Teams can spend some, none or all company revenue on safety investments. Companies can operate in the negative to fund safety investments, but remember – your goal is to be profitable at the end of the game
- Any money NOT SPENT, becomes part of the company's bottom line (profitability) – an important measure of game performance.
- Investments are only made at the start of each quarter and cannot be changed until the next quarter

MAKE MANAGEMENT DECISION #2: STAFFING LEVELS

- Each department can have up to six employees (no more)
- Employees can be either experienced, inexperienced, or a combination of both
- Temporary employees are available **only** to replace sick or injured staff
- The cost of each employee is listed on the first page of the Incident Calendar
- For any month that a temporary employee is used to cover for a sick or injured employee, the company will pay **both** workers' salaries.
- Employee payroll cost is accounted for at the end of each quarter
- Staffing levels are only made at the start of each quarter and cannot be changed until the next quarter – although temporary staff may be brought in to replace employees

LAST THING – PRODUCTION RATIOS

- Production Ratios are found on the first page and on each quarterly check point of the Incident Report. In quarter 1, all employees can move 3 fish units (or 3,000 pounds of fish) each month. In quarters 2, 3, and 4 – the production ratio will be determined by worker morale – essentially how many incidents occurred in the company in the previous (last) quarter.

THINGS TO CONSIDER IN MAKING DECISIONS

- Which departments are likely to have more frequent and more severe incidents?
- What types of incidents would you expect to see occur more or less frequently?
- Do you think experience matters in terms of how frequently and severely an employee is injured?
- Do you think safety impacts the performance of employees who are not injured or sick?

NOW, START THE GAME!

SCORING (FOR FACILITATORS)

Note to facilitators regarding scoring: CRASH! can be played as a competitive game between teams – this can motivate active participation and create some accountability for performance (although we do not recommend the use of these scores in grading or in other high stakes measures of participant performance). To score the game, ask students to report their Ending Revenue and Management Score (calculated at the end of the game in the box below the financial analysis section) on a small piece of paper that includes a team identifier (name or number). Since the emphasis here is on proper management of health and safety, some facilitators prefer to use the management score as a primary indicator of success, using relative profitability (calculated as a ratio of each group's ending revenue compared to the highest grossing team) as a lesser factor of success.

Example: Team 3

Management Score = 70% (calculated and reported by participants)

Profitability Score = 80% (calculated by facilitator as Team 3's Ending Revenue divided by the most profitable team's ending revenue)

Team Score = (Management Score (70) * 0.6) + (Profitability Score (80) * 0.4) = 74

The 0.6 and 0.4 weighted measures used to calculate the team score can be adjusted to reflect more or less emphasis on management.

Another simple scoring method is to multiply ending revenue by the management score.

These are just suggested methods and can be adapted at the facilitator's discretion.

FOLLOW-UP

SYNTHESIS QUESTIONS

- Tell me what you experienced playing the game – where did you encounter challenges and how did you solve them?
- Where did the majority of incidents occur? Why do you think that is?
- Was it troublesome to hire inexperienced employees? Why?
- What investments in health and safety seemed to be most effective? What does this tell us?
- In the real world, if an employee was out work for several months or forever – how might this impact the worker's:
 - Financial Situation
 - Family Obligations
 - Emotional Wellbeing
- What do you know about your rights as a worker? Why is it important to know your rights?
- We have seen how businesses are impacted financially by investing in health and safety – what is an employer's moral obligation to protect workers?
- Does it make good business sense to ensure a safe and healthy work environment? How is a business impacted when it fails to take health and safety precautions (worker morale, productivity, increased payroll, higher workers compensation rates, low public perception)?
- How does society benefit from widespread promotion of health and safety in the workplace?

WHERE TO LOOK FOR ADDITIONAL RESOURCES

Creating Healthy and Safe Workplace:

<http://www.lni.wa.gov/Safety/Basics/Steps/default.asp>

Common workplace injuries:

<http://www.lni.wa.gov/Safety/Topics/AtoZ/InjuryFS/default.asp>

Information regarding teens in the workplace:

<http://lni.wa.gov/WorkplaceRights/TeenWorkers/JobSafety/default.asp>

<http://lni.wa.gov/WorkplaceRights/TeenWorkers/>

ALTERNATIVES

ALTERNATIVE ACTIVITY

Understanding that the CRASH! simulation requires a significant commitment of time and resources not always available in the school setting, the following mini-activity has been constructed for high school teachers looking to introduce workplace health and safety in the classroom. We recommend setting the stage with students using the background information outlined above. Students should be broken into small groups of 4-5 participants. Two industry scenarios are presented below, teachers may choose between the two or students may decide their industry before the activity begins.

INSTRUCTIONS

Business Management Scenario

You are the management staff of a manufacturing business producing electronic equipment. A safety inspection has been conducted of your production plant and administrative offices with three major findings:

- **Overexertion:** production plant employees suffer a higher than average number of injuries due to muscle strain from lifting, pushing or carrying heavy equipment and boxes.
- **Repetitive Motion:** administrative and sales employees report a higher than average number of repetitive motion injuries (examples: typing or filing).
- **Air Quality:** the air quality of the production plant was found to be hazardous to human health due to chemical pollutants produced in the manufacturing of CD players.

Your Challenge: Draft a risk management plan that seeks to address the three health and safety hazards listed above (taking into consideration all that you have learned about health and safety in the workplace). Your plan will be submitted for review by a Health and Safety Specialist. Remember, health and safety is a tremendously important aspect of running a successful business – influencing productivity, employee morale, and company reputation. It can also be costly. Your company will receive a health and safety rating based on your plan ranging from 1 star (little or no intervention) to 5 stars (strong commitment to employee safety).

Hierarchy of risk management “controls” (In order of effectiveness):

1. **Eliminate** threat – example: replace faulty machinery (most effective, but also often most expensive)
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3. **Protect** in the event that a threat occurs – example: training or personal protective equipment (least effective, but also often least expensive)

Healthcare Management Scenario

You are the management staff of a health clinic providing general health services to 4,500 patients annually. A safety inspection has been conducted of your clinic and administrative offices with three major findings:

- **Overexertion:** clinic employees suffer a higher than average number of injuries due to muscle strain from lifting, pushing or carrying heavy equipment and boxes.
- **Spread of Disease:** a test of doors knobs, tables and chairs in your clinic finds a larger than average accumulation of germs that could spread illness from one person to another.
- **Fatigue:** employees currently work long shifts in a high paced work environment. Employees report fatigue and stress as the top two contributing factors to medical mistakes, impacting both their own safety and that of their patients.

Your Challenge: Draft a risk management plan that seeks to address the three health and safety hazards listed above (taking into consideration all that you have learned about health and safety in the workplace). Your plan will be submitted for review by a Health and Safety Specialist. Remember, health and safety is a tremendously important aspect of running a clinic – influencing productivity, employee morale, insurance rates, and clinic reputation. Investments in health and safety can also be costly. Your clinic will receive a health and safety rating based on your plan ranging from 1 star (little or no intervention) to 5 stars (strong commitment to employee safety).

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CRASH! – HEALTH AND SAFETY PLAN

Team Name_____

Please detail your health and safety plan below. Be sure to reference Risk Management Controls to achieve the most effective outcomes.

SPONSORS

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