The *BSO Plus Safety Refresher* is a checkpoint designed from the monthly safety topics. Completing this refresher is your way to stay current on the safety information over the 3 years between BSO Plus and BSR.

TEST ANSWERS: ANNUAL SAFETY REFRESHER

1. **A corporation that is convicted of contraventions of the Occupational Health and Safety Act (OHSA) can face fines of up to $1,500,000.**

   a. True
   b. False

   RATIONALE: The maximum penalties for a contravention of OHSA or its regulations are set out in the OHSA Section 66. A successful prosecution could, for each conviction, result in:
   - A fine of up to $100,000 for an individual person and/or up to 12 months imprisonment;
   - A fine of up to $1,500,000 for a corporation.

2. **Match the following list of organizations to their purpose.**

a) Ministry of Labour, Training and Skills Development	____**d**	Includes 6 provincially funded medical clinics across Ontario
b) Health and Safety Ontario	____**a**	Uses trained workplace inspectors to enforce the law under the OHSA
c) Workplace Safety and Insurance Board	____**c**	Provides insurance benefits for sick or injured workers
d) Occupational Health Clinics for Ontario Workers	____**b**	Made up of 4 provincially funded safety associations: WSPS, IHSA, PSHSA and WSN

RATIONALE: You can find more information about these organizations and what they do at their websites:
- Ministry of Labour, Training and Skills Development (MLTSD): http://www.labour.gov.on.ca
- Health and Safety Ontario (HSO): www.healthandsafetyontario.ca
- Workplace Safety and Insurance Board (WSIB): www.wsib.on.ca
  Occupational Health Clinics for Ontario (OHCOW): www.ohcow.on.ca

3. According to the Occupational Health and Safety Act, as a worker, you have 3 basic rights. Match the following rights to an example of how that right could be exercised.

a) Right to Know	**c**	You notice that a scaffold is missing a tag. Before beginning to work you report the unsafe condition to your supervisor
b) Right to Participate	**b**	You join your Joint Health and Safety Committee or become a Health and Safety Representative
c) Right to Refuse	**a**	You attend regular staff meetings and safety talks in the workplace

RATIONALE: The Occupational Health and Safety Act protects your right to know about health and safety hazards in the workplace; the right to participate in keeping your workplace safe, which can best be done by becoming a Joint Health and Safety Committee member or a Health & Safety Rep; and the right to refuse unsafe work.

4. Every worker is responsible only for his/her own safety.

a. True

b. False

RATIONALE: All workplace parties have duties under the Occupational Health and Safety Act. The amount of responsibility assigned to each party is directly related to the level of authority they have in the workplace. OHSA s.28 states that workers are responsible for their own safety and actions, as well as for others who may be affected by their actions. You should not endanger yourself or others. If you see something, say something. While it is your responsibility, as a worker, to always wear or use the protective equipment that your employer requires, it is the duty of your supervisor to ensure that you are given the correct equipment and that you know how to use it properly.

5. If you are overexposed to a hazardous material, the extent of your injury or illness may depend on which of the following? (Circle all that apply)

a. Quantity and concentration of the chemical

b. Exposure to more than one chemical

c. Length of exposure

d. State of health

RATIONALE: Both short and long-term exposure to a designated substance can have serious potential health hazards. Exposure to designated substances must be limited or controlled, as it may result in permanent damage to the human organ system, various forms of cancer, and even death.

6. **If you are likely to be exposed to a controlled product while on the job, your employer has a legal duty under the Occupational Health and Safety Act (OHSA) to educate you about that product and the precautions you must take to protect yourself.**

   a. True
   b. False

   RATIONALE: Employers are required by the OHSA, s.42 (1) to educate workers who are likely to be exposed to a controlled product on the job. To help control exposure to designated substances, your employer must put in place a control program for each substance a worker may be exposed to. This control program must include a written plan, exposure control measures, air monitoring measures and methods of analysis, and a medical surveillance program (OHSA, Reg. 490, s. 20).

7. **Each of the 11 designated substances will have their own individual written control program and safe handling procedures.**

   a. True
   b. False

   RATIONALE: According to the Occupational Health and Safety Act, “every worker shall work in compliance with the work practices and hygiene practices in accordance with every control program respecting a designated substance that applies to the workplace.” (Reg. 490/09, s. 26). This means that you must follow the control program put in place by your employer in order to help keep you safe. If you have any questions regarding how to handle a designated substance, always ask your supervisor before beginning work.

8. **“Latency Period” is:**

   a. The 24 hours after exposure to a substance
   b. The time between exposure to a carcinogen, toxin, or disease-causing organism and development of a consequent disease
   c. The time between developing symptoms and when you recover from them
   d. None of the above

   RATIONALE: “Latency period” is the time it takes for an adverse health effect to develop after first exposure to a hazard.

9. By cutting into a vinyl floor tile that contains non-friable asbestos, the asbestos can be released as friable asbestos and inhaled.

a. True
b. False

RATIONALE: Non-friable asbestos fibres are locked or bound into the material itself but may be released through cutting or sanding activities.

10. Signs and coloured metal banding are two methods for identifying asbestos in the workplace. What should you do if you're not sure whether or not something contains asbestos?

a. Try to crush a piece of material by hand to see if it crumbles
b. Try to ignite it
c. Assume it is asbestos, do not disturb it, and contact your supervisor
d. Ask your co-workers if they know

RATIONALE: The Asbestos Regulation 278/05 describes the activities and preparation required to work with this hazardous material. You must be specifically trained to work with asbestos. In the field, all known asbestos containing material (ACM) will be clearly identified, however, unknown ACM may still be present. If you are not sure whether or not something contains asbestos, assume it does and contact your supervisor. All plants that have ACM must maintain an Asbestos Management plan that documents the known ACM locations. These plans are available for your review.

11. When working with RCFs, the greatest risk of exposure is due to inhalation of fibres and/or dust.

a. True
b. False

RATIONALE: Along with the skin, eye, and respiratory effects caused by exposure to RCFs, there is also a concern that the individual fibres are small enough to penetrate deep into the lungs and possibly lead to the development of lung cancer, mesothelioma, or silicosis. When working with RCFs, the greatest risk of exposure is due to inhalation of fibres and/or dust.

12. Refractory Ceramic Fibres (RCFs) may be found in: (Circle all that apply)

a. Gaskets and seals
b. Drywall compound
c. Furnace liners
d. Thermal insulation in industrial boilers

RATIONALE: RCFs are widely used to replace asbestos in applications requiring high heat resistance, such as: thermal insulation in industrial boilers, high temperature pipe and vessel insulation, furnace liners and heating element supports, high temperature gaskets and seals. RCFs are commonly used in the steel, petrochemical, aerospace, and automotive industries.

13. Which of the following are properties of H_2S? (Circle all the apply)

a. Colourless gas
b. Occurs naturally
c. Rotten egg smell at high concentrations
d. Heavier than air

RATIONALE: H_2S is an extremely toxic colourless gas. It is highly flammable, even explosive in some gas/air mixtures. It has a “rotten egg” smell at very low concentrations, but this cannot always be detected. H_2S gas is heavier than air. It collects in low-lying areas and poorly ventilated areas such as trenches, basements, sewers lines, and pits.

14. You can trust your sense of smell to detect the presence of H_2S.

a. True
b. False

RATIONALE: According to the Canadian Centre for Occupational Health and Safety (CCOHS), H2S takes only 100 ppm to overwhelm and deaden your sense of smell. You must never rely on you sense of smell to identify H2S. Signs let you know the areas where H2S is or may be present, and both personal and audible alarms warn you of a toxic vapour release.

15. Benzene is a natural component of gasoline and is often held in pipelines or tanks.

a. True
b. False

RATIONALE: Benzene can be found on many local plant sites as it is an important component of gasoline, it is often held in pipelines or full tanks. It is frequently present as it is being shipped, in large quantities, by trucks, rail, and boats.

16. Examples of PPE controls for benzene include: (Circle all that apply)

a. Chemical safety goggles
b. Chemical face shield
c. Respiratory protection
d. Double hearing protection

RATIONALE: Workers can protect themselves from benzene exposures through the use of engineering controls and proper PPE, including wearing chemical safety goggles and face shield when contact is possible, chemical protective clothing e.g., gloves, aprons, boots, and proper respiratory protection.

17. Exposure to breathable crystalline silica can cause: (Circle all that apply)

a. Lung cancer
b. Bronchitis
c. Emphysema
d. Silicosis

RATIONALE: Long term exposure to this crystalline silica dust can result in silicosis - a lung disease caused by inflammation and scarring in the upper lobes of the lungs, for which there is no cure. Exposure has been also associated with other respiratory diseases, such as lung cancer, chronic obstructive pulmonary disease (including bronchitis and emphysema), as well as kidney and immune system diseases.

18. Crystalline silica is the primary component of which of the following materials:

a. Brick
b. Iron
c. Aluminum
d. Topsoil

RATIONALE: Silica is found in many materials common on construction sites, including soil, sand, concrete, masonry, rock, granite, and landscaping materials.

19. 95% of lead accumulates in the bones and can be released back throughout the body over time, causing damage to: (Circle all that apply)

a. Brain
b. Bones
c. Liver
d. Kidneys

RATIONALE: The most common route of entry of lead is inhalation and ingestion. It is not readily absorbed through the skin. Once absorbed into the body, 95% of this metal accumulates in the bones and can be released back throughout the body over time, causing damage to the liver, kidneys, brain, bones, and nervous system. Lead can affect virtually every system of the body.

20. Personal protective equipment (PPE) to be used when lead exposure is possible includes: (Circle all that apply)

a. Safety harnesses

b. Gloves
c. Non-permeable clothing
d. Approved respirators

RATIONALE: Eliminating the hazard by substituting a safer process or material, where possible, is the most effective control such as a lead-free alternative (for example, using lead-free paint). Making physical modifications to facilities, equipment, and processes such as making enclosures away from lead-generating processes for workers can reduce exposure.
Workers should wear proper personal protective equipment such as gloves, non-permeable clothing and approved respirators if lead exposure is possible.

21. The following are characteristics of mercury: (Circle all that apply)

a. Liquid at room temperature

b. Highly flammable

c. Heavy and dense metal
d. Odourless

RATIONALE: Mercury is a heavy, dense metal that is liquid at room temperature. The freezing point of mercury is below -38º Celsius (-36º Fahrenheit). The liquid is so dense that a bowling ball would float in it. Liquid mercury is quite volatile. It is odourless and will not burn however, when exposed to air, mercury metal vaporizes and can be inhaled.

22. Crude oil streams can contain mercury.

a. True
b. False

RATIONALE: Mercury is a natural component of oil and gas and may be present at high concentrations in some formations. Crude streams contain various levels of mercury which stick to the sides of vessels. Concentrations of mercury in each individual stream are not always known. Doing hot work inside a vessel, like grinding or welding, can produce mercury fumes.

23. Your body may be suffering from heat stress if you experience:

a. A red bumpy, itching rash
b. Painful cramps in your most worked muscles
c. Heavy sweating, nausea or vomiting
d. All of the above

RATIONALE: The physical conditions caused by heat stress affect the body's ability to cool itself. These conditions can range from minor disorders to severe disorders, each with their own set of causes, symptoms and treatment. It is important to be aware of the symptoms of heat stress so that you can seek immediate treatment when necessary.

24. The Safety Partnership's Heat Stress guidelines recommend the following controls for heat stress: (Circle all that apply)

a. Issuing alerts
b. Increasing physical activity
c. Drinking water at regular intervals
d. Stopping non-essential work

RATIONALE: The Safety Partnership released their Heat Stress Guidelines on July 30th, 2013. They updated the guideline on April 20, 2017. These guidelines list heat stress controls for various humidex ranges & working conditions for un-acclimatized workers. Following a heat stress guideline an important measure in preventing heat stress. Different companies may use different guidelines, but all of them should have a policy in place.

25. In addition to alcohol, certain medications may prevent the body from generating heat normally. These include sedatives, anti-depressants, tranquilizers and some heart medications.

a. True
b. False

RATIONALE: A hat can help prevent up to 50% of the body's heat loss while clothing layers trap heat close to the body. Caffeine contributes to dehydration, which affects the body's ability to function properly, and should be avoided. When exposed to cold temperatures you should avoid drinking alcohol. Alcohol increases blood flow to the outer layer of skin which leads to faster loss of body heat. Certain medications may prevent the body from generating heat normally.

26. Artificial sources of radiation include:

a. X-ray machines
b. Nuclear gauges
c. Minerals in the soil
d. All of the above

RATIONALE: If you work with x-ray equipment, radiography instruments for equipment inspection, or nuclear density gauges, you could be potentially exposed to radiation. Radioactive materials (including uranium, thorium, and radium) also exist naturally in soil and rock.

27. If you are working with or near radiation, exposure dosages will be carefully monitored and recorded.

a. True
b. False

RATIONALE: The main ways to control radiation exposure include engineering controls, administrative controls and personal protective equipment. If you are working with or near radiation, you must receive site specific training on how to deal with that hazard.

28. Ringing or buzzing in the ear may be a sign of:

a. Mental health issues
b. Muscle tension response
c. Tinnitus
d. None of the above

RATIONALE: Noise is one of the most common occupational health hazards. Auditory effects include hearing impairment resulting from excessive noise exposure. Noise-induced permanent hearing loss is the main concern related to occupational noise exposure. Workers may also experience temporary hearing loss, acoustic trauma, or tinnitus (ringing or buzzing in the ear).

29. Ontario's Noise Regulation (O. Reg. 381/15) states that over an 8-hour workday no worker may be exposed to a sound level greater than:

a. 65 dBA
b. 75 dBA
c. 85 dBA
d. 90 dBA

RATIONALE: The Noise Regulation (O. Reg. 381/15) applies to all workplaces covered under the Occupational Health and Safety Act (OHSA). The regulation requires that every employer shall ensure that no worker is exposed to a sound level greater than a time-weighted average exposure limit of 85 dBA measured over an 8-hour workday. A constant exposure to 84 dBA over a 12-hour period would mean that worker protection is still mandated, because the exposure limit for noise would be exceeded.

30. Workers who operate hand-held vibrating tools are at risk for experiencing vibration related health conditions.

a. True
b. False

RATIONALE: Vibrating objects, such as power tools, send vibration through the hands and arms. Exposed occupational groups include operators of chain saws, chipping tools, jackhammers, jack leg drills, grinders and many other workers who operate hand-held vibrating tools. Groups exposed to whole-body vibration include operators of trucks, buses, tractors and those who work on vibrating floors.

31. Which of the following factors may affect the severity of vibration related health effects? (Circle all that apply)

a. Medical history of injury to fingers and hands
b. Duration of exposure each workday
c. State of tool maintenance
d. Protective practices and equipment including gloves, boots, work-rest periods

RATIONALE: Vibrating objects, such as power tools, send vibration through the hands and arms, which can cause changes in tendons, muscles, bones and joints, and can affect the nervous system. The severity of hand-arm vibration syndrome depends on several other factors, such as the characteristics of vibration exposure, work practice, personal history and habits.

32. An example of indirect contact of a biological agent would be: (Circle all that apply).

a. Contact with contaminated objects and surfaces
b. Contact with the spray of droplets from coughing
c. Animal-to-person contact
d. Insect bites

RATIONALE: Direct contact occurs when infected blood or body fluid from one person enters another person's body at an entry site, such as infected blood splashing in the eye. Indirect contact occurs when a person's skin touches an object that contains the blood or body fluid of an infected person, such as picking up soiled dressings contaminated with an infected person's blood or body fluid and enters either through broken skin or is transferred to a mucous membrane, such as the eye.

33. Identify the appropriate control measures for protecting workers from biological hazards. (Circle all that apply)

a. Handwashing
b. Worker training and immunization programs
c. Proper equipment cleaning
d. Spill cleanup procedures

RATIONALE: Standard precautions include maintaining personal hygiene, such as handwashing, using PPE, engineering controls, work practice controls, worker training, and proper equipment cleaning and spill cleanup procedures.

34. Ergonomics is the science of designing:

a. Equipment and devices to fit the worker to the work
b. Personal protective equipment that is a comfortable fit for workers
c. Equipment and devices to fit the work to the worker
d. Office chairs that offer various support settings

RATIONALE: Ergonomics is the study of the kind of work you do, the environment you work in, and the tools you use to do your job. More specifically, it is the science of designing equipment and devices to fit the work to the worker.

35. **Ergonomic hazards include the following elements:**

a. Work stations, tools and equipment, physical environments, and the organization of work
b. Tools and equipment and the physical environment
c. Temperature, lighting, and vibration
d. Workstations and the organization of work

RATIONALE: Poor design of any of these elements can put physical strain on your body. Documenting repetitive tasks, awkward postures and the forces required to perform jobs helps to assess the degree of ergonomic hazards. By being alert to problems, you can help identify injury causes and solutions.

36. Which of the following actions will help minimize slips, trips, and falls? (Circle all that apply)

a. Pay attention to your footing
b. Wear appropriate footwear
c. Clean up after yourself throughout the day
d. Do not rush

RATIONALE: Both slips and trips result from some a kind of unintended or unexpected change in the contact between the feet and the ground or walking surface. This fact shows that good housekeeping, quality of walking surfaces (flooring), selection of proper footwear, and appropriate pace of walking are critical for preventing fall incidents.

37. If you come across a housekeeping issue that you are unable to correct, you should:

a. Cover the problem with some plywood
b. Report the problem to your supervisor
c. Avoid the area
d. Leave the problem for somebody else to fix

RATIONALE: Housekeeping is an ongoing task that needs to be done continuously throughout the day, not just at the day's end. Poor housekeeping frequently contributes to accidents by hiding hazards that cause injuries. Cleaning and organizing must be done regularly to prevent workplace hazards. Everyone is responsible for maintaining a clean workspace.

38. The working at heights training requirements apply to workers who are required under O. Reg. 213/91 (Construction Projects) to use which of the following methods of fall protection: (Circle all the apply)

a. A travel restraint system
b. A fall arrest system
c. A safety net
d. A work belt or a safety belt

RATIONALE: Ontario's Ministry of Labour (MOL) requires that any worker operating under the Construction Projects Regulation (O. Reg. 213/91) must successfully complete an approved Working at Heights training program if they use specified fall protection systems. The working at heights training requirements apply to workers who are required under O. Reg. 213/91 to use any of the following methods of fall protection: a travel restraint system, a fall restricting system, a fall arrest system, a safety net, a work belt, or a safety belt.

39. Match the colour of the scaffold inspection tag to its appropriate meaning.

a) Green Tag	**b**	Workers must read the tag and follow all listed precautions before using
b) Yellow Tag	**a**	Scaffold is safe to use
c) Red Tag	**d**	To be treated as a "red tag", the scaffold is not safe to use
d) No Tag	**c**	The scaffold is unsafe to use under any circumstances

RATIONALE: It is important to understand the three-tag system. A red inspection tag on a scaffold indicates that the scaffold is unsafe to use, and only the people who are qualified to erect and dismantle scaffolds may use a red-tagged scaffold. A yellow tag indicates the need for caution. Follow the precautions listed on the yellow tag prior to using the scaffold. The green tag means the scaffold is safe to use. If no tag is present, the scaffold must be treated as if it has a red tag.

40. Common causes of dropped objects include: (Circle all that apply)

a. Inadequate risk assessment
b. Well maintained tools
c. Poor housekeeping
d. Collisions and snagging

RATIONALE: Many factors can contribute to a dropped object. In order to stop dropped and falling objects when working at height, an understanding of the primary causes of the incidents can help conduct more thorough risk assessments and avoid overlooking some fundamental reasons why drops happen. Objects to consider with potential to cause accidents are hand tools, tools or equipment left behind after a task, or equipment mounted in an elevated location that has the potential to fall due to movement or environmental conditions.

41. Physical controls for dropped objects include: (Circle all that apply)

a. Staying in the moment
b. Tool lanyards and tethers
c. Lifting bags
d. Storage buckets, belt straps, and backpacks

RATIONALE: Physical controls physically stop objects from falling (or from falling very far). These may include tool lanyards and tethers, lifting bags, storage buckets, belt straps, and backpacks.

42. In addition to the tagout requirements of Construction Regulation 213/91 s.190(6), the Safety Partnership requires the tag to include:

a. Your photo ID
b. The Supervisor's contact number
c. The contact information of the person who installed the tag
d. All of the above

RATIONALE: No one is allowed to remove a lock and tag without the permission of the person who installed it. In the event that a worker has forgotten to remove their lock and tag upon completion of their work, having a contact name and number available allows for timely contact with the worker to confirm that they are safely out of the locked-out work area.

43. In addition to electrical energy, workers may be exposed to hazards from which of the following: (Circle all that apply)

a. Hydraulic energy
b. Thermal energy
c. Mechanical energy
d. Pneumatic energy

RATIONALE: Lockout/Tagout procedures apply when we perform servicing or maintenance on certain pieces of equipment or machinery. Most of us recognize that electricity is the primary source of hazardous energy we face, but it's certainly not the only one. Hazardous energy is defined as any electrical, mechanical, hydraulic, pneumatic, chemical, thermal, gravitational, or other energy that can harm personnel." (CSA Z460-13)

44. **For a fully or partially enclosed space to be designated as a confined space under the Occupational Health & Safety Act, it must meet BOTH of the following conditions:**
i. not designed and constructed for continuous human occupancy, and
ii. in which atmospheric hazards may occur because of its construction, location or contents or because of work that is done in it

a. True
b. False

RATIONALE: Section 1 of Regulation 632/05 for Confined Spaces states that both of these conditions must be met for a partially or fully enclosed space to be considered a confined space for most workplaces covered under that Occupational Health & Safety Act.

45. When communicating with workers inside a confined space, if the safety attendant does not get a response, he should:

a. Follow the emergency rescue plan
b. Send a co-worker in to check
c. Stick his head into the entry to see what's happening
d. Go find a supervisor

RATIONALE: Section 15(2) of the Confined Spaces regulation states that no attendant shall enter a confined space at any time. The attendant's role is to monitor the safety of the worker inside; to provide assistance to him or her from outside the confined space; and to summon an adequate rescue response if required.

46. Examples of "Distracted Driving" include: (Circle all that apply)

a. Texting while driving
b. Excessive speeding
c. Eating while driving
d. Searching for something in the car

RATIONALE: A driver's first responsibility is the safe operation of the vehicle. Engaging in any secondary activity which takes the operator's attention away from driving is deemed unsafe.

47. WHMIS provides information to workers about hazardous materials through which of the following method(s)? (Circle all that apply)

a. Supplier & Workplace labels
b. Safety Data Sheets
c. Worker education & training
d. Workplace inspections

RATIONALE: WHMIS is a Canada-wide system that provides workers with information about hazardous materials through supplier and workplace labels, safety data sheets (SDSs), and worker education and training.

48. **Match the WHMIS 2015 hazard pictogram with the correct category below:**

								
A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**

F **1.1 Flammables** (gases, aerosols, liquids, solids); Pyrophoric (liquids, solids, gases); Self-reactive substances and mixtures; Self-heating substances and mixtures; Substances and mixtures which, in contact with water, emit flammable gases, organic peroxides

D **1.2 Oxidizers** (liquids, solids, gases)

B **1.3 Gases under pressure**

E **1.4 Health Hazards** (Carcinogenicity; Germ cell mutagenicity; respiratory sensitization; reproductive toxicity; Specific target organ toxicity – single exposure; Specific target organ toxicity – repeated exposure; Aspiration hazard)

A **1.5 Corrosive to metals; Skin corrosion; Serious eye damage**

G **1.6 Explosives; Self-reactive substances and mixtures; Organic peroxides**

H **1.7 Acute toxicity** (**fatal or toxic**; oral, dermal, inhalation)

C **1.8 Acute toxicity** (**harmful**); Skin irritation; Eye irritation; Skin sensitization; Specific target organ toxicity – single exposure (respiratory irritation or drowsiness or dizziness)

I **1.9 Biohazardous infectious materials**

49. Some benefits of TASC's are: (Circle all that apply)

a.	Increases the communication of hazards in the workplace
b.	Effective method for identifying hazards associated with each step of the job
c.	Clearly lists all controls required to mitigate the hazards
d.	Valid for an entire shift without requiring a review

RATIONALE: The purpose of a TASC is to provide an opportunity for all workers to discuss the key steps of a job, the hazards associated with the job, and methods to be used to control or eliminate those hazards. TASC ensures that everyone working on the job has the same understanding of risks and controls and is specific to the task being completed at the time.

50. TASC's must be reviewed: (Circle all that apply)

a. After breaks
b. When the scope of the work changes
c. Every hour
d. If a new worker joins the group

RATIONALE: Because a variety of factors can affect the work environment throughout the day, the TASC should be reviewed when returning to the job site after breaks and any time something about the job changes.