

### Unit 3 Learning Guide

Name: \_\_\_\_\_

Using a pencil, complete the following notes as you work through the related lessons. Show ALL work as is explained in the lessons. You are required to have this package completed BEFORE you write your unit test. Do your best and ask questions if you don't understand anything!

#### Workplace Chemicals and Safety

1. WHMIS is an acronym for \_\_\_\_\_.

2. List the 3 key elements of WHMIS.

a.

b.

c.

3. List the 4 potential hazards that an SDS document contains information on.

a.

c.

b.

d.

4. List 2 WHMIS responsibilities for the following:

a. Supplier

1.

2.

b. Employer

1.

2.

c. Worker

1.

2.

5. How does the SDS document differ from the product label?

6. The SDS is the \_\_\_\_\_ point for the development of a complete \_\_\_\_\_ and \_\_\_\_\_ program.

7. The SDS document has 16 different sections with relevant information about the product. Watch the video, “*SDS - Top 10 Things to Know*” and list the information contained in the following sections;

a. Section 1 –

b. Section 2 -

c. Section 4 –

d. Section 6 –

e. Section 7 –

f. Section 8 –

h. Section 9 –

i. Section 10 –

j. Section 11 -

**\*\*Test your WHMIS knowledge by completing the 2 WHMIS symbol matching activities. Make sure you can achieve a score of 100% correct responses.\*\***

*Young Canadian workers have the right to know about workplace hazards. Watch the ‘Young Workers Rights’ video and answer the following questions.*

8. What are the 2 responsibilities of the employer to ensure employees are safe?

a.

b.

9. List the 3 options that are available to young workers to help keep the workplace healthy and safe?

- a.
- b.
- c.

10. What are the steps to take if you believe your workplace is unsafe?

- a.
- b.

11. Click on the link and test your knowledge of workplace hazards in working as a landscaper, in a commercial kitchen, in a warehouse and as a server.

12. Stephanie is a 16-year old and works in the kitchen of a senior's home. To clean cooking pans, she soaks them in a powerful cleaning solution. She uses gloves to protect her hands and arms. One day as Sophie was lifting 3 large pans out of the cleaning solution at once, the pans slipped out of her hands and back into the solution, which splashed all over the side of her face and into her left eye. She was blind in one eye for 2 weeks. Stephanie was lucky as her eyesight returned.

- a. What was the hazard?
  
- b. How could Stephanie have prevented the accident?

13. Spencer works part-time for a friend of his fathers who runs a woodworking business. One day Spencer was applying some gasoline to clean wood cupboards. He was working alone and had done this same job many times before. Some of the gasoline had spilled on his clothes which he was aware but thought it was OK because his mom would wash them when he got home. It was getting dark so Spencer turned on a propane lantern beside him. Spencer described that, 'everything seemed to catch fire at once.' He wasn't found for 2 hours, went through intensive rehabilitation, is badly scared but feels lucky to be alive.

- a. What was the hazard?

b. How could Spencer have prevented the accident?

### Waste Recycling & Disposal

1. The *Waste Discharge Regulation* defines what is released into the \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ under the *Environmental Management Act in BC*.

2. Identify the 5 tiers in the *waste management/pollution prevention* hierarchy from the less desirable to the most desirable option and the goal for each tier.

a.

b.

c.

d.

e.

Watch the video '*The Garbage Economy*' and answer the following questions.

3. The World's Bank estimates of the amount of urban garbage production by 2025 will be \_\_\_\_\_ *metric tons*. (Convert *pounds* to *metric tons*)

4. Describe the business relationship between Norway and Sweden in managing garbage.

5. Define a '*Circular Economy*' in your own words and the primary focus of a Circular Economy.

6. Describe 3 valuable components of a smart phone that can be reused.

a.

b.

c.

7. How can smart phones be part of the Circular Economy?

8. What is the European Union's action plan for the Circular Economy?

9. How is the 'Renault' car company in France supporting a Circular Economy?

10. In your opinion, can a Circular Economy make trash obsolete? Explain your answer.

11. What is the challenge with plastics and their role in establishing a Circular Economy?

Watch the National Geographic video, '*Plastics 101*' and answer the following questions;

12. What is the natural source for plastics?

13. When were the first synthetic plastics developed?

14. Why is synthetic plastic so versatile?

15. Synthetic plastics are derived from \_\_\_\_\_.

16. Name the 4 steps involved in the production of synthetic plastics and a statement to indicate what is occurring at each step.

- a.
- b.
- c.
- d.

17. Pre-production plastic pellets are called \_\_\_\_\_ and this is what is sold and transported to \_\_\_\_\_.

18. What does a 'resin identification code' indicate?

19. How many tons of plastic have been produced since the 1950's?

20. List 3 examples of 'single-use' plastics.

- a. c.
- b.

21. What percentage of plastics wastes are single-use plastics?

22. List 3 environmental problems associated with single-use plastics.

- a. c.
- b.

23. List the 4 examples shown in the video that we can do to reduce single-use plastic waste.

- a.
- b.
- c.
- d.

24. Name the 3 plastic consuming organisms described in the video.

- a.
- b.
- c.

25. Define '*biodegradable bioplastics*'.

26. As a consumer, if you had a choice between a sustainable plastic product and a synthetic plastic product, which would you choose and why? How much consideration would you give to price differences assuming sustainable plastic products cost more?

27. What is the annual financial cost to Vancouver taxpayers of single-use items?

28. What are the waste problems associated with polystyrene foam?

- a.
- b.
- c.
- d.

29. Are paper shopping bags a good alternative to plastic shopping bags? Why?

30. What problem do plastic straws pose at the recycling plant?

31. Nearly \_\_\_\_% of garbage in public waste bins is \_\_\_\_\_ & \_\_\_\_\_.

Watch the video 'Are You Eating Plastics for Dinner?' and answer the following questions.

32. The average consumer in a developed country produces \_\_\_\_\_ kg of plastics a year and today more than \_\_\_\_\_ metric tons can be found in the world's oceans.

33. Some plastics won't degrade for up to \_\_\_\_\_ years.

34. What is meant by the statement, 'marine animals are dying with a full stomach'?

35. What are 'micro-plastics' and how do they end up in the marine environment?

36. What are the 4 health risks linked to the hazardous chemicals added to plastics?

a.

b.

c.

d.

37. What is the advantage and disadvantage of 'bio-plastics'?

38. Determine the distance between the Island of Roatan in the Caribbean and the coastline of Guatemala.

39. In the video, 'Plastic Destroying Island Paradise', what is the analogy The Young Turks (TYT) make between climate change and plastic pollution?

40. Which of the '9 Tips for Living with Less Plastics' do you practice? How can you improve your choices/lifestyle to live with less plastics?

Watch the video 'How Recycling Works' and answer the following questions:

41. Recycling is the process of \_\_\_\_\_ waste materials and \_\_\_\_\_ them down into \_\_\_\_\_ that can be turned into \_\_\_\_\_ products.

42. Describe the recycling process at a 'Single Stream' Material Recovery Facility (MRF).

**Jobs in Materials Science**

Pick two of the jobs listed that might interest you and complete the following table.

	Job #1	Job #2
Job Title		
Training Required		
Closest school to you that prepares for this job.		
Prerequisites for program.		
Expected wage in western Canada.		
What you like about the job.		
What you don't like about the job.		