# CLOSE ENCOUNTERS OF THE TASTY KIND

FITNESS AND NUTRITION

## MISSION DESCRIPTION

Difficulty: **EASY**

Duration: **60 MINUTES**

Materials: **MODERATE**

In this activity, participants can learn about sensory evaluation and its importance in selecting food for space. Participants can perform a sensory evaluation of various food items to determine which ones would qualify for space flight. Participants can evaluate foods based on the texture, packaging, and appearance.

**ACTIVITY:** After presenting a lesson using the background information, organize the participants into four groups. Have each group wash their hands. Each group will be given a collection of food items. As a group, they will assess each item and decide whether or not it is suitable for astronauts on the International Space Station (ISS). Each group will write down their assessment for each item on the activity worksheet. When the activity is completed, invite one group to present their assessments to the class.

**NOTE:** It is not necessary for the participants to taste or eat the foods, but if participants will be tasting or eating the items, they must fill out an allergen declaration form in advance.

*If there are concerns about allergens, certain items can be omitted from the activity or substituted.*

**ALTERNATIVE ACTIVITY (NO COST):** In groups, participants assess the items in their lunch bags and decide whether or not they are suitable for astronauts on the ISS. Each group will write down the items in their lunches and complete the evaluation sheet. When the activity is completed, invite one group to present their assessments to the class.

### TIMELINE

| Breakdown | Duration |
|---|---|
| Lesson using background information | 20 minutes |
| Explanation of activity | 5 minutes |
| Group activity | 20 minutes |
| One group presents to class | 10 minutes |
| Wrap-up | 5 minutes |
| **Total** | **60 minutes** |

# BACKGROUND

When we send Canadian food products to space, we must ensure it meets all space flight requirements. In addition to meeting requirements, the food must taste great and increase variety to the food selection aboard the International Space Station (ISS).

## RECOMMENDED PROPERTIES FOR SPACE FOOD

- Not carbonated (not bubbly or fizzy)
- Not crumbly or brittle
- Food is chewy, sticky, thick, spicy, or flavourful
- No strong or potent odours
- Unique (the item is different from the standard ISS menu items to increase variety)

## FOOD PACKAGING AND PROCESSING FOR SPACE FLIGHT

Foods packaged or processed in the following ways are best for space flight:

- Not packaged in glass
- Small quantity packages
- Lightweight (dehydrated or naturally lightweight)
- Shelf-stable at room temperature for a minimum of 12 months

**Sensory evaluation** of food is very important when identifying foods to send to space. It allows us to rank foods depending on their texture, appearance, taste, and smell. Sensory evaluation involves using the five senses (sight, touch, taste, hearing, smell) to analyze various food products.

With every food item we eat, we use sensory evaluation without realizing it! For example, when you eat soup, you may notice:

- Aroma—does it smell savoury?
- Appearance—does it have chunks of vegetables or meat? What colour is it?
- Texture—is the soup creamy? Thick? Thin & watery?
- Taste—is it salty? Sweet?
- Sound—are you slurping the soup?

For sensory evaluation, special descriptive words are used for texture, appearance, taste, and smell in order to be as detailed and accurate as possible. More information about space food can be found via http://www.asc-csa.gc.ca/eng/astronauts/living-in-space/eating-in-space.asp.

# MISSION PREPARATION

## MATERIALS FOR CLASS SIZE OF 24 STUDENTS

- Background
- Food items for evaluation
  - Four cans of tuna
  - Whole grain crackers
  - Four cans of sodium-reduced soup (any flavour)
  - Unsweetened dried fruits
  - Cans or bottles of sparkling water (any flavour)
- Activity worksheet

## SET-UP

- Food items have been purchased.
- Arrange food items into four groups (one of each item per group). For the dried fruits and crackers, place a few of each into bowls or plates.
- Four student activity sheets printed.

## POTENTIAL ACTIVITY COST (BEFORE TAX)*

| **Item** (examples of products; these specific items are not required) | **Each** | **In quantities of four, where applicable** |
|---|---|---|
| Chunk light tuna, 170 g | $1.17 | $4.68 |
| Brown rice crackers, 100 g | $1.97 | $1.97 |
| Cream of celery condensed soup | $0.67 | $2.68 |
| Unsweetened dried apricots | $3.97 | $3.97 |
| Flavoured sparkling water, 8 × 355 mL (before tax) | $2.97 | $2.97 |
| **TOTAL** | **$10.75** | **$16.27** |

**Prices taken from Walmart.ca. You do not need to buy these specific items.*

## ADDITIONAL OPTIONAL COSTS (IF TASTING OR EATING)

| | |
|---|---|
| Paper plates | $1.25 |
| Utensils, eco-friendly compostable | $5.99 |
| Napkins, 25 pack | $1.69 |
| Disposable cups, 50 | $1.00 |
| **TOTAL** | **$9.93** |
| **TOTAL WITH FOODS** | **$26.20** |

## KEY FOR ACTIVITY WORKSHEET: EVALUATE FOOD FOR SPACE MISSIONS

Assessment of the various items

A variety of answers work. As long as they make sense, mark correct.

a. Which sensory words describe the **appearance?**

**TUNA:** watery, shiny, lumpy
**CRACKERS:** solid, thin or thick
**SOUP:** colourful, lumpy, thick, thin, watery, lumpy
**DRIED FRUITS:** thick, colourful, could be shiny
**SPARKLING WATER:** bubbly, wet

b. Which sensory words describe the **texture?**

**TUNA:** flaky, soggy
**CRACKERS:** brittle, crispy, dry
**SOUP:** soggy
**DRIED FRUITS:** chewy, smooth, sticky
**SPARKLING WATER:** liquid

c. Which sensory words describe the **taste or smell?**

**TUNA:** strong/pungent, fishy
**CRACKERS:** bland
**SOUP:** could be spicy, sweet, bland
**DRIED FRUITS:** sweet, fruity
**SPARKLING WATER:** fruity

d. Do you think this item is suitable for astronauts to eat or drink on the International Space Station (ISS)? Why or why not?

**TUNA:** Yes – easy-to-open package and small individual serving. However, things to worry about: pungent smell and excess liquid in package.
**CRACKERS:** Yes – but could be brittle and might break during transport and the resulting crumbs may be a problem in microgravity.
**SOUP:** No – difficult to open, heavy product, difficult to eat in space.
**DRIED FRUITS:** Yes – easy to open and a source of fruit. Chewy texture is good for microgravity.
**SPARKLING WATER:** No – carbonated.

e. If the item is not suitable for astronauts on the ISS, describe methods of changing the item to make it suitable.

**CRACKERS:** Can repackage into small quantities or substitute with a product that does not produce lots of crumbs. On the ISS, pita bread with an extended shelf life is provided as a substitute for bread and most crackers.
**SOUP:** dehydrated soup.
**SPARKLING WATER:** change to a flavoured water with no carbonation.

## KEY FOR ACTIVITY WORKSHEET: EVALUATE YOUR LUNCH FOR SPACE MISSIONS

For this activity, mark it as participation.

# ALLERGEN DECLARATION FORM

In class, we will be evaluating the appearance, texture, taste, and smell of foods for astronauts in space. If you would like your child to participate in the tasting portion of the activity, please disclose any food allergies your child has.

Participant name: _____

Emergency contact name: _____

Emergency contact number: _____

Participant's food allergies: (if none, write "none")

_____

_____

_____

_____

Parent/Guardian signature: _____

Date signed: _____

Participant signature: _____

Date signed: _____

# ACTIVITY WORKSHEET: EVALUATE FOOD FOR SPACE MISSIONS

## SENSORY EVALUATION VOCABULARY

| APPEARANCE | | TEXTURE | | TASTE/SMELL | |
|---|---|---|---|---|---|
| colourful | shiny | brittle | smooth | bitter | stale |
| bubbly | solid | chewy | soft | bland | strong/pungent |
| crumbly | thick | crispy | soggy | fishy | sweet |
| foamy | thin | dry | sticky | fruity | |
| greasy | watery | flaky | stretchy | salty | |
| lumpy | wet | gooey | tough | sour | |
| powdery | | hard | liquid | spicy | |

## INSTRUCTIONS

Answer the activity worksheet questions below to assess each food item and decide whether or not it is suitable for astronauts on the International Space Station (ISS).

## QUESTIONS

1. Assess the can of tuna

   a. Which sensory words describe the **appearance?** _____

   _____

   b. Which sensory words describe the **texture?** _____

   _____

   c. Which sensory words describe the **taste or smell?** _____

   _____

   d. Do you think this item is suitable for astronauts to eat on the ISS? Why or why not?

   _____

   _____

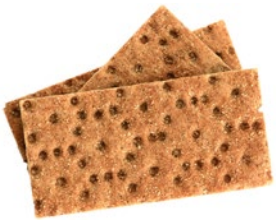
   e. If the item is not suitable for astronauts on the ISS, describe methods of changing the item to make it suitable.

   _____

   _____

## QUESTIONS

2. Assess the crackers



   a. Which sensory words describe the **appearance?** _____

   _____

   b. Which sensory words describe the **texture?** _____

   _____

   c. Which sensory words describe the **taste or smell?** _____

   _____

   d. Do you think this item is suitable for astronauts to eat on the ISS? Why or why not?

   _____

   _____

   e. If the item is not suitable for astronauts on the ISS, describe methods of changing the item to make it suitable. _____

   _____

3. Assess the can of soup

   a. Which sensory words describe the **appearance?** _____

   _____

   b. Which sensory words describe the **texture?** _____

   _____

   c. Which sensory words describe the **taste or smell?** _____

   _____

   d. Do you think this item is suitable for astronauts to eat on the ISS? Why or why not?

   _____

   _____

   e. If the item is not suitable for astronauts on the ISS, describe methods of changing the item to make it suitable. _____

   _____

4. Assess the dried fruits

   a. Which sensory words describe the **appearance?** _____

   _____

   b. Which sensory words describe the **texture?** _____

   _____

   c. Which sensory words describe the **taste or smell?** _____

   _____

   d. Do you think this item is suitable for astronauts to eat on the ISS? Why or why not?

   _____

   _____

e. If the item is not suitable for astronauts on the ISS, describe methods of changing the item to make it suitable. _____

_____

5. Assess the sparkling water

a. Which sensory words describe the **appearance?** _____

_____

b. Which sensory words describe the **texture?** _____

_____

c. Which sensory words describe the **taste or smell?** _____

_____

d. Do you think this item is suitable for astronauts to eat on the ISS? Why or why not?

_____

_____

e. If the item is not suitable for astronauts on the ISS, describe methods of changing the item to make it suitable. _____

_____

# ACTIVITY WORKSHEET: EVALUATE YOUR LUNCH FOR SPACE MISSIONS

## SENSORY EVALUATION VOCABULARY

| APPEARANCE | | TEXTURE | | TASTE/SMELL | |
|---|---|---|---|---|---|
| colourful | shiny | brittle | smooth | bitter | stale |
| bubbly | solid | chewy | soft | bland | strong/pungent |
| crumbly | thick | crispy | soggy | fishy | sweet |
| foamy | thin | dry | sticky | fruity | |
| greasy | watery | flaky | stretchy | salty | |
| lumpy | wet | gooey | tough | sour | |
| powdery | | hard | liquid | spicy | |

## INSTRUCTIONS

Answer the activity worksheet questions below to assess each food item in your lunch and decide whether or not it is suitable for astronauts on the International Space Station (ISS).

## QUESTIONS

Assess the food and drink items in your lunch

a. Which sensory words describe the **appearance?** Please separate by food item.

b. Which sensory words describe the **texture?** Please separate by food item.

c. Which sensory words describe the **smell?** Please separate by food item.

d. Which sensory words describe the **taste?** Please separate by food item.

e. Which items do you think are suitable for astronauts to eat or drink on the ISS? Why?

f. If an item is not suitable for astronauts on the ISS, describe methods of changing the item to make it suitable.