

## Microbial Hurdle Technology Activity

1. Assemble in groups of 3-5 individuals. Identify someone to serve as a secretary to record the information and identify a presenter for the group.
2. Look carefully at each of the products assigned to your group.
  - What is the commodity (fruit, vegetable, dairy, meat/poultry, cereal, etc.)?
  - Is it fresh (F) vs. further processed (P)?
  - What type of packaging is used? (ex. modified atmosphere packaging, vacuum packaging, transparent film, can, plastic container, Ziploc bag, etc.)
  - Record these observations on your notebook.
3. Read the product information and ingredient labels (if available) on each product carefully.
  - Are any preservatives or antimicrobial compounds included in the formulation of the product that have the potential to enhance the microbial stability of the product?
  - Record these observations on your notebook.
4. For products that are further processed, consider the hurdles in the process that would provide microbiological stability to the products. Hurdles may include lowering of water activity by addition of solutes (sugar, salt), drying, pasteurization, irradiation, cooking, cooling/chilling/freezing, fermentation, etc.
  - Record these observations on your notebook.
5. Identify one thing that is the most important to ensure the stability for each of the food products. Is it packaging, a hurdle, a preservative/antimicrobial, or something else?
  - Note this observation by an asterisk (\*)
  - Presenter: be prepared to explain the rationale for your selections to the entire group.
6. Line up the products from least processed to most processed (least microbiologically stable to most microbiologically stable).
  - Record the rankings on your notebook.
7. Have the presenter share your findings with the entire group. Remember to bring all food products to the front of the room during the presentation.

REMEMBER TO HAVE FUN WITH THIS EXERCISE!, ☺

## Microbial Hurdle Technology Exercise

Commodity: \_\_\_\_\_

Food Product	A	B	C	D	E	F
<b>Identity (ex. Jelly)</b>						
<b>Fresh (F) or Further Processed (P)</b>						
<b>Type(s) of packaging</b>						
<b>Preservative(s) and/or antimicrobial(s) used in the manufacture of the product</b>						
<b>Hurdle(s)</b>						

NOTE: Remember to \* the most important process, hurdle, compound, etc. that ensures the stability for each product.

# FINAL RANKING

COMMODITY: \_\_\_\_\_

Least Stable	Not Very Stable	Somewhat Stable	Moderately Stable	Very Stable	Most Stable

List each of the products for a given commodity from least stable microbiologically to most stable microbiologically

ADDITIONAL COMMENTS:

### **Examples of foods to purchase for this activity**

Fruit: Grapes, grape jelly/jam, grape fruit leather/strips, raisins, grape juice, wine

Fresh apricots, apricot jelly/jam, dried apricots, apricot juice, apricot wine

Meat: Ground beef (fresh or irradiated), vacuum packaged steak, roast beef (deli meat), canned corned beef, beef jerky, summer sausage

Fresh pork, vacuum packaged pork chop, ham (deli meat), Spam (canned ham), pork jerky, pepperoni or genoa salami

Vegetables: Carrots (fresh), carrot packs, shredded carrots, carrot juice, canned carrots, pickled carrots

Fresh mushrooms, pickled mushrooms, mushroom gravy, canned mushrooms or soup, dried mushrooms, mushroom gravy

Dairy: Raw or pasteurized milk, yogurt, cheese, evaporated milk, sweetened condensed milk, UHT milk

Cereal: Raw flour, bread, pasta, tortillas, frozen bread dough, canned bread