

# Pathogen Tracker Game



## Pathogen Tracker Game

### Stage Three: Find the Source of the Contaminated Food

#### Level I Student Worksheet

#### Answer Sheet

Interviews with patients: List each of the patients and the places where each has eaten hotdogs.

- Amodini Khan – Dog Days
- Matt Rufello – Rusty's Red Hots
- Roger Martin – Aunt Miriam's
- Franklin Spoon – Dog Days, Aunt Miriam's, Rusty's Red Hots
- Aimee Ferguson – Dog Days, Aunt Miriam's

**BEFORE YOU CONTINUE THE GAME**, explain whether or not you think you have enough information to determine the source of the outbreak.

I do not have enough information to determine the source of the outbreak; I need to know from where the vendors purchased their hotdogs.

#### CONTINUE THE GAME

List each of the vendors and tell from which meat company each buys its hotdogs.

- Aunt Miriam's – Frank N. Furter Inc.
- Dog Days – Homerun Hots and Frank N. Furter Inc.
- Rusty's Red Hots – Frank N. Furter Inc.

Based on the results of your interviews with the patients and vendors, which meat company do you think is the most likely source of the contaminated hotdogs? Explain your reasons for choosing this meat company.

Frank N. Furter Inc. is the most likely company – all three of the restaurants bought hotdogs from it.

Investigating the Meat Companies – Remember: Testing is very expensive! Now that you have decided which company's hotdogs to test, which months' hotdogs do you want to test? Give your reasons for choosing the month(s).

Students should refer to the Data Table in Stage One where they recorded the patients' names and the date on which their symptoms first appeared. Based on that data, students should choose August because four out of five patients became ill in August. One became ill in September.

Which month's hotdogs were contaminated with *L. monocytogenes*?

August

**BEFORE YOU CONTINUE THE GAME**, after reading the encyclopedia entry about the process used to manufacture hotdogs, where in the manufacturing process could contamination have taken place?

The hotdogs could have been contaminated in any one of the five steps, especially if the machinery was contaminated.

### CONTINUE THE GAME

Describe in detail the steps used in the plant to test for possible areas of contamination.

1. Swabs are taken from all possible points of contamination.
2. The bacteria from these swabs are grown into cultures.
3. The bacteria from the cultured colonies of the likely *Listeria* are isolated and then their DNA is extracted.
4. This DNA is riboprinted and, using Pathogen Tracker, the strain is identified.

Make a table to show which areas of the plant were tested and which of those areas tested positive for *L. monocytogenes*.

Test Results from the Plant		
Area of the Plant	Tested	Bacteria Found
Floors	X	X
Mixer	X	
Stuffer Linker	X	X
Smoke House	X	
Peeler	X	
Packaging Machine	X	X

As a result of using the Pathogen Tracker database, where in the plant was the strain of *L. monocytogenes* DUP 1042B found?

Packaging

What are the USDA Guidelines that must be followed when contamination is found in a plant that manufactures food?

When a source of contamination has been found, USDA recommends that the plant initiate an immediate recall of all potentially contaminated products. The plant will often be shut down for a period of time while contamination sources are tracked and plans are developed for disinfecting the plant and for preventing contamination of finished products in the future. If the company that owns the plant refuses to comply with the USDA's recommendations, the USDA may remove its approval of the company. Once a company can provide evidence that a suitable plan to prevent future contamination incidences has been put into action, that the plant has been cleaned and sanitized appropriately, and that intensive testing does not show any contamination, the plant can be re-opened. The plant will often operate under closer USDA supervision and testing for a while.

Four different action plans have been proposed. Which one of these plans will you choose and which will you reject? Please give your reasons for the plan you choose and those plans you reject.

Plan 1: Rejected – the USDA recommends that a recall be issued – it does not issue the recall. The company voluntarily closes the plant and cleans it until no more contamination is present.

Plan 2: Rejected – the plan says not to issue a recall but when contamination is found, USDA usually recommends that a recall be issued.

Plan 3: Selected – this plan follows the USDA guidelines.

Plan 4: Rejected – the USDA only recommends that a recall be issued and that a plant be shut down.

In the previous Stages, you listed the steps you think scientists follow in solving a case of foodborne illness outbreak and made revisions to those steps. Now that you have completed Stage Three, what additional revisions, if any, will you make to the steps and why will you make those revisions?

Students should add the following steps to their plans:

Patients are interviewed to find out where they might have eaten the contaminated food;

Health officials interview employees at the establishments where the patients have eaten and inspect those establishments;

Samples taken from the establishment are sent to the lab to be cultured; and,

Health officials analyze the results from the cultures and, if necessary, request a product recall or the closing of the establishment.