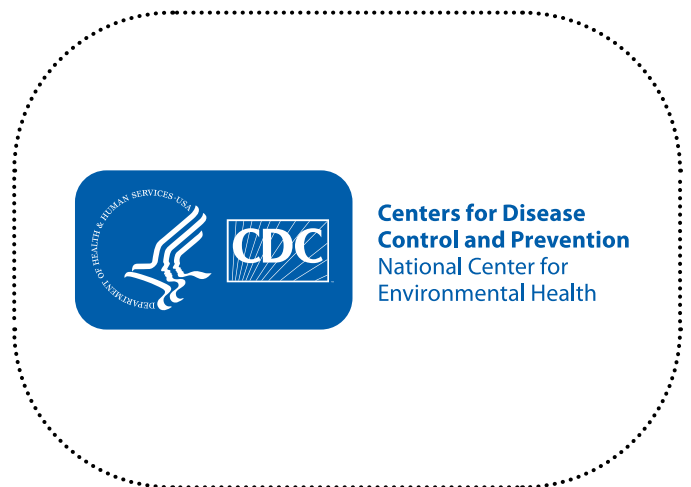
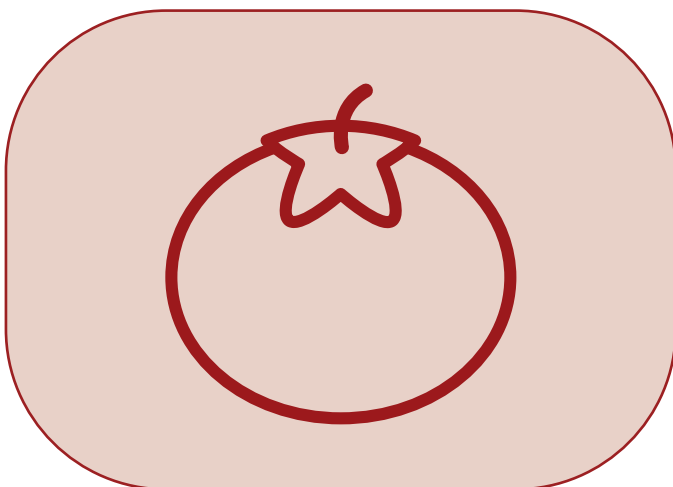
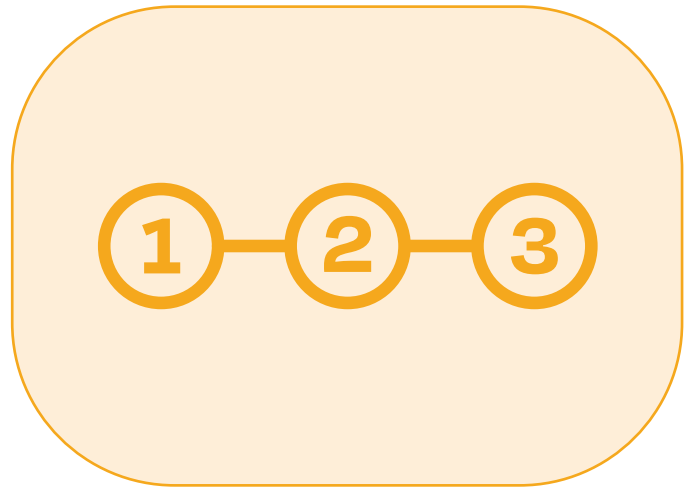
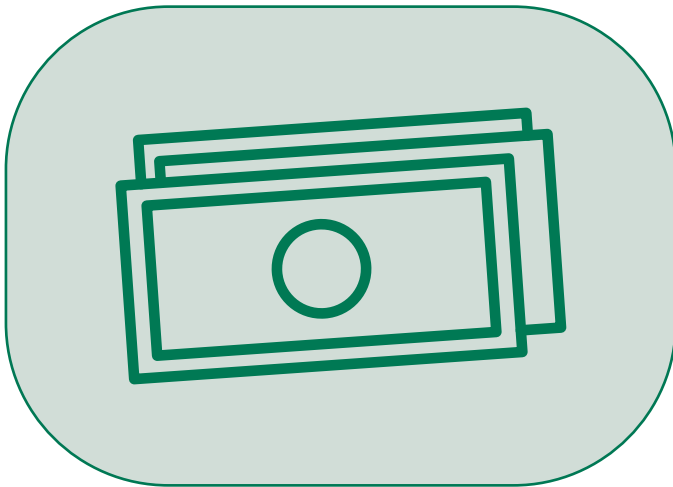
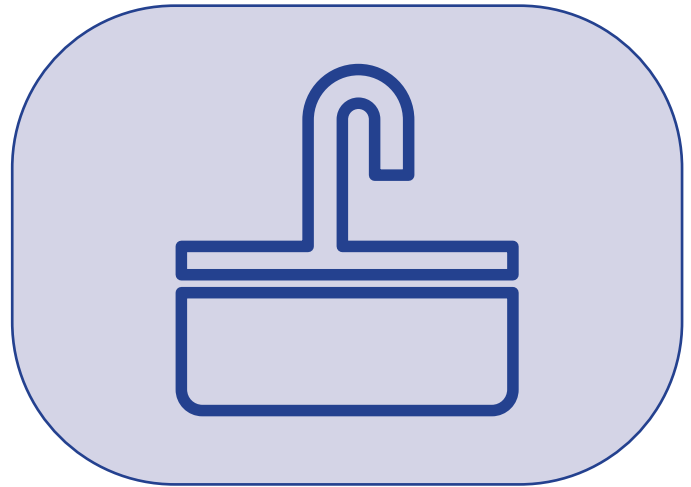
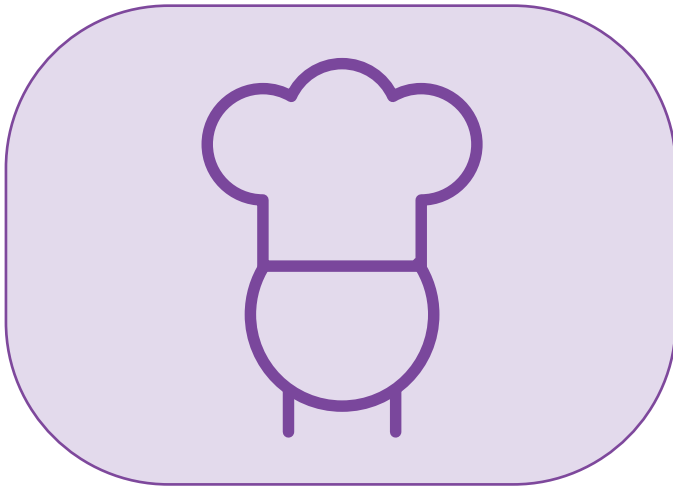


# Field Guide to Identifying Root Causes



# Contents

<b>People</b> .....	<b>3</b>
<b>Equipment</b> .....	<b>5</b>
<b>Economics</b> .....	<b>7</b>
<b>Process</b> .....	<b>8</b>
<b>Food</b> .....	<b>9</b>

## About this Field Guide

Outbreak investigators can look at clues and ask questions to identify root causes of outbreaks.

Root causes of outbreaks are the reasons outbreaks occur. They are also called environmental antecedents.

Use this guide when investigating outbreaks linked with restaurants and other retail food establishments. Keep in mind, to find the root cause of the outbreak you are looking for the specific practices and factors that contributed to it. These are not always the same as inspection violations.

Each outbreak is unique. The examples and antecedents included in this reference do not include everything that can happen in an outbreak. Rather, they provide a starting point for considering questions, observations, and evidence to help identify environmental antecedents.

In this guide, we use the terms "facility" and "establishment" interchangeably. Both refer to a retail food establishment.



# People



If you saw this	Then consider this	If yes, root cause could be this
<p><b>Several issues</b> led to the outbreak.</p>	<p>Does this establishment have a well-documented history of foodborne outbreaks or poor compliance with food safety practices?</p>	<p>Lack of food safety culture</p>
<p>Staff members are <b>involved in practices linked to the outbreak.</b></p>	<p>Do observational or interview data indicate poor food safety attitudes, perceptions, or opinions among restaurant staff members?</p>	<p>Lack of food safety culture</p>
<p>Appropriate equipment and policies are in place, but <b>staff members are not following the establishment's procedures.</b></p>	<p>Do the employees lack training?</p>	<p>Lack of employee training on specific processes</p>
<p>Appropriate equipment, policies, and training are in place, but <b>staff members are not following the establishment's procedures.</b></p>	<p>Is the manager (Certified Food Protection Manager or Certified Kitchen Manager) absent or not in the establishment during all hours of operation? Is the manager unaware that staff members are not following the establishment's procedures?</p>	<p>Lack of oversight</p> <p>Other root causes could be:</p> <ul style="list-style-type: none"> <li>• Language barriers</li> <li>• Lack of staffing</li> <li>• Lack of training</li> </ul> <p>Also consider root causes listed in the economics category.</p>



## People *Continued*



If you saw this	Then consider this	If yes, root cause could be this
Appropriate equipment, policies, and training are in place, but <b>staff members are not following the establishment's procedures.</b>	Is the manager aware of the deficiency but disregarding it?	Lack of oversight  Other root causes could be: • Lack of food safety culture
Appropriate equipment, policies, and training are in place, but <b>staff members are not following the establishment's procedures.</b>	Does the manager lack understanding of the importance of the hazard?	Lack of oversight  Other root causes could be: • Lack of training • Lack of food safety culture
<b>Management and employees do not speak the same language.</b>	Do managers and employees speak differing languages?	Language barrier
New staff members seem <b>unfamiliar with practices, policies, or both</b> and might be inexperienced.	Have most staff members been there for less than a year? Is the facility frequently hiring new staff members?	High turnover
Minimal staff members are present in the establishment during <b>peak times</b> or they are <b>juggling multiple duties</b> (for example, dishwashing, taking orders, food prep, etc.)	Does the establishment have staffing issues? Are they operating with fewer staff members than needed?	Low or insufficient staffing



## Equipment



If you saw this	Then consider this	If yes, root cause could be this
<b>A lack of necessary equipment</b> in the establishment (for example, thermometer, hand sink, three-compartment sink)	Does the establishment need equipment that is not available onsite?	Insufficient capacity of equipment
<b>Some equipment is available but not in quantities needed</b> to ensure food safety.	Is more equipment needed to operate successfully?	Insufficient capacity of equipment
<b>Equipment is improperly maintained or dirty</b> (for example, thermometers are not calibrated, deli slicer or other equipment is visibly dirty).	Is the equipment improperly cleaned and sanitized OR cleaned at insufficient frequencies?	Lack of preventive maintenance
<b>Equipment is broken</b> (for example, cold-holding unit running hot or steam table not working).	Is equipment broken or not working correctly?	Lack of preventive maintenance
<b>Equipment is used incorrectly</b> (for example, hand sinks are used for purposes other than handwashing, like dishwashing).	Are staff members unsure how to use the equipment properly? Are staff members taking shortcuts rather than using the equipment as intended?	Equipment is improperly used  Other root causes could be: <ul style="list-style-type: none"><li>• Lack of training</li></ul>



## Equipment *Continued*



<b>If you saw this</b>	<b>Then consider this</b>	<b>If yes, root cause could be this</b>
<b>Equipment is used as an alternative for personal hygiene</b> (for example, using a sanitizer bucket to dip hands in).	Are employees using equipment other than hand sinks to wash their hands?	Equipment is improperly used  Other root causes could be: <ul style="list-style-type: none"><li>• Lack of training</li></ul>
<b>Equipment is used to wash or clean food contact surfaces instead of a designated ware-washing area</b> (for example, washing large pots in a mop sink).	Are staff members washing and sanitizing dishes, utensils, or equipment outside of a dishwashing machine or three-compartment sink?	Equipment is improperly used  Other root causes could be: <ul style="list-style-type: none"><li>• Lack of training</li></ul>
<b>Layout promoted pathogen or chemical contamination</b> of surfaces, hands, or ready-to-eat foods.	Does the establishment need more space to prepare foods safely? Have changes to the menu (for example, added complex foods) resulted in layout issues or processes beyond the original intent or construction?	Poor facility layout  Also consider root causes in the processes and economics categories.



## Economics



If you saw this	Then consider this	If yes, root cause could be this
<p><b>Poor employee hygiene</b> (for example, bare hand contact with ready-to-eat foods, not washing hands, dirty aprons or wiping clothes, etc. contributing to contamination).</p> <p>Conditions indicate <b>potential contamination from a sick employee</b> (based on incubation time, pathogen, suspected food, etc.).</p>	<p>Do employees avoid taking off work when sick because they cannot afford to take off a shift?</p> <p>AND</p> <p>Is sick leave unavailable or inconsistently provided?</p>	<p>Lack of sick leave or other financial incentives to adhere to good employee health practices</p> <p>Other root causes could be:</p> <ul style="list-style-type: none"> <li>• Lack of training</li> <li>• Lack of oversight</li> </ul>
<p>Staff members <b>do not have the supplies needed</b> to do their work.</p>	<p>Are supplies missing? Are more supplies needed for the establishment's operations (for example, gloves, sanitizing agents, soap, etc.)?</p>	<p>Lack of supplies needed for operating the restaurant</p> <p>Other root causes could be:</p> <ul style="list-style-type: none"> <li>• Lack of training</li> <li>• Lack of oversight</li> </ul> <p>Also consider root causes in the economics categories.</p>

①—②—③

## Process

①—②—③

If you saw this	Then consider this	If yes, root cause could be this
<p><b>No attempt</b> was made to control a hazard.</p>	<p>Were necessary policies missing to control the hazard?</p>	<p>Insufficient processes to mitigate the hazard</p>
<p>Staff members were following the procedure correctly, but there was an <b>issue with the procedure</b> itself.</p>	<p>Was the procedure unverified and never proven to control the food safety risk?</p>	<p>Insufficient processes to mitigate the hazard</p>
<p><b>Written procedures</b> (for example, recipe cards) were <b>different than observed</b> in the food flow.</p>	<p>Are employees deviating from their usual or standard operating procedures?</p>	<p>Employees or managers not following the facility's process</p> <p>Other root causes could be:</p> <ul style="list-style-type: none"> <li>• Lack of training</li> <li>• Lack of oversight</li> </ul>
<p>A unique <b>event or situation</b> happened the day in question that made the establishment <b>deviate from their normal procedures</b> (for example, loss of power).</p>	<p>Could anything have been done differently when the establishment prepared the food on the day in question? For example, did the establishment need to make a larger batch than the recipe called for? Was the establishment short on time and had to speed up the process? Was any equipment not working that day?</p>	<p>Employees or managers not following the facility's process</p> <p>Also consider root causes in the processes and economics categories.</p>





# Food



Some foods require time and temperature control for safety (TCS) to reduce illness-causing pathogens and toxins. In some jurisdictions, these foods are referred to as potentially hazardous foods.

If you saw this	Then consider this	If yes, root cause could be this
<p><b>Food is improperly sourced or obtained from an unapproved source</b> (for example, required inspection or regulatory oversight is missing, product label is missing or inadequate).</p>	<p>Was the food improperly sourced? Was the product label missing or inadequate?</p>	<p>Food not treated as TCS</p> <p>Also consider root causes in the processes and economics categories.</p>
<p><b>Food is mishandled or improperly stored or prepared</b> (for example, in cooking, cooling, holding).</p> <p>OR</p> <p>Food is <b>used or served beyond its discard date.</b></p>	<p>Is the food mishandled or stored or prepared improperly? Is there a recipe or standard procedure for how the food is prepared or handled in the establishment? If not, why not?</p>	<p>Food not treated as TCS</p> <p>Also consider root causes in the processes and economics categories.</p>