NO PREP

HACCP

How Professionals Keep Food Safe

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Name: Period: Date:

HACCP: How Professionals Keep Food Safe

A System Built for the Moon

In the early 1960s, NASA had a problem that sounds almost funny until you think about it. Astronauts were going to spend days in a sealed capsule with no medical facility, no way to land quickly, and no gravity. A case of food poisoning in orbit would not be an inconvenience; it would be a catastrophe. The existing approach to food safety was inspection, which meant testing finished product samples at the end of production. NASA, the Pillsbury Company, and the U.S. Army Natick laboratories worked out that inspection could never provide the assurance they needed, for a simple statistical reason. Testing a sample tells you about the sample. To be certain a batch is safe you would have to test all of it, and testing destroys what you test. Their alternative was to stop trying to catch bad product at the end and instead control the process that produces it, identifying every point where something could go wrong and building a check into that point. They called it Hazard Analysis and Critical Control Points, or HACCP, pronounced hassip. It is now the foundation of food

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Prevention Instead of Inspection

The philosophical shift at the heart of HACCP is worth stating plainly because it applies far beyond food. Inspection asks whether the finished thing is acceptable. Process control asks whether the steps that produce it were performed correctly.

Inspection is reactive and expensive: by the time you find a problem, you have already produced a batch, and you may have shipped it. Process control is proactive: if the temperature was verified at the cooking step, the cooling step, and the holding step, then the product is safe by construction and there is nothing left to catch. HACCP also introduces the idea of a hazard, which is anything that could cause illness or injury, sorted into three categories that show up on every food safety exam. Biological hazards are the pathogens covered earlier in this unit: bacteria, viruses, parasites, and fungi. They cause the overwhelming majority of foodborne illness. Chemical hazards include cleaning products, sanitizers at the wrong concentration, pesticide residue, and toxic metals leaching from damaged equipment. Physical hazards are foreign objects: glass, metal shavings, bone fragments, plastic, jewelry, bandages, and hair. A HACCP plan starts by listing every hazard that could realistically enter a specific product at a specific step, which is why the plan for a salad bar looks nothing like the plan for a smokehouse. HACCP also assumes a foundation is already in place. Prerequisite programs, meaning the sanitation schedule, pest control, supplier approval, equipment maintenance, and personal hygiene policies covered earlier in this unit, have to be running before a HACCP plan means anything. HACCP is the roof, not the foundation.

The Seven Principles

HACCP is built on seven principles applied in order, and they are meant to be worked through as a sequence rather than memorized as a list. Principle one is conduct a hazard analysis: map the flow of food through the operation and identify the biological, chemical, and physical hazards at each step. Principle two is determine the critical control points, or CCPs, which are the specific steps where control is essential and where a failure cannot be corrected later. Cooking chicken is a CCP because it is the last chance to destroy Salmonella. Principle three is establish critical limits, the measurable boundaries that separate safe from unsafe, such as cooking chicken to 165 degrees F. Critical limits must be numbers, not adjectives; thoroughly cooked is not a critical limit. Principle four is establish monitoring procedures that state who checks what, how, and how often. Principle five is establish corrective actions, deciding in advance what happens when a limit is missed, such as continuing to cook and rechecking, or discarding the batch. Principle six is establish verification procedures that confirm the system itself is working, including

calibrating thermometers and reviewing records. Principle seven is establish record keeping and documentation, because in food safety a control that was not written down did not happen. The order genuinely matters. You cannot pick critical control points before you know the hazards, you cannot set a critical limit for a step you have not identified, and you cannot write a corrective action without a limit to miss. Skipping ahead produces a plan that looks complete and controls nothing.

Control Point or Critical Control Point

The distinction students find hardest, and the one inspectors ask about most, is the difference between a control point and a critical control point. A control point is any step where a hazard can be controlled. A critical control point is a step where control is essential because it is the last opportunity to prevent, eliminate, or reduce the hazard to an acceptable level. Put simply, if a later step will catch the problem, the current step is a control point. If nothing downstream will catch it, it is a CCP. Washing lettuce that goes into a salad is a CCP, because that salad is never going to be cooked and nothing else will remove contamination. Washing lettuce that goes into a soup is only a control point, because the cooking step will handle it. Receiving is generally a control point, since improper storage can still be corrected. Cooling is a CCP, because there is no later step that undoes hours in the danger zone. Cooking poultry is a CCP. Hot holding is a CCP. Deciding which is which requires knowing the full flow of the food, which is exactly why principle one comes first. Get the flow wrong and every principle after it is applied to the wrong steps. There is a cost to getting it wrong in the other direction too. A plan that labels every step a CCP is not a cautious plan; it is an unusable one. Monitoring and recording take real time, so treating twenty steps as critical guarantees that the three that actually are will be rushed or skipped.

Why This Belongs in a School Lab

It is fair to ask why a high school foods class should care about a regulatory framework designed for food manufacturers. Two reasons. The first is practical: HACCP thinking is the direct path to a food handler card and to a ServSafe manager certification, which is a recognized credential that makes a teenager more employable in every restaurant, grocery store, hospital kitchen, and catering company in the country. The second reason is broader. HACCP teaches a way of thinking about risk that transfers to anything with steps and consequences. Identify

what could go wrong, find the moments where a mistake becomes uncorrectable, define a measurable standard at those moments, decide in advance what you will do when the standard is missed, and write down what actually happened. That structure applies to a chemistry lab, a construction site, a clinic, and a personal budget. In a school foods lab the plan can be genuinely simple. The flow is receive, store, prep, cook, serve, cool, and reheat. The CCPs are cooking, cooling, and hot holding. The critical limits are the internal temperatures from earlier in this unit. The monitoring is one student per group with a calibrated thermometer and a clipboard, and the record is a sheet with a date, a time, a number, and a name. That sheet is the whole point of the unit in one page. Everything covered here, the danger zone, the thermometer, the shelf order, the handwash, the sanitizer strip, and the cleaning schedule, becomes a step somebody performs and signs for. Food safety stops being a list of facts and becomes something a kitchen actually does.

Key Information: HACCP Fundamentals

Detail	Information
Stands For	Hazard Analysis and Critical Control Points
Origin	Developed for NASA by Pillsbury and the Army in the 1960s
Core Shift	Control the process instead of inspecting the finished product
Three Hazards	Biological, chemical, and physical
Principle 1	Conduct a hazard analysis of the food flow
Principle 2	Determine the critical control points
Critical Limit	A measurable boundary such as cooking chicken to 165 degrees F
CCP Test	No later step can correct the failure

Case Study: The Chicken Salad Flow Chart

Ms. Okafor's advanced foods class was catering a staff luncheon and had to submit a one-page HACCP plan first. Her students mapped the flow of the chicken salad: receive raw chicken, store, cook, cool, chop, mix with mayonnaise and celery, hold cold, serve. Then they argued for twenty minutes about washing the celery. Half the class insisted it was a critical control point. "Celery is a raw vegetable," one student said, "and dirt is a hazard." Ms. Okafor asked one question: "After you wash it, is there any step left that would remove contamination?" The room went quiet. Nothing downstream cooked the celery. The class marked celery washing as a CCP, then flagged cooking the chicken to 165 degrees F, the two-stage cooling of that chicken, and cold holding at 41 degrees F. Their final plan named a student monitor and a recorded temperature for each one, plus a corrective action written in advance. Ms. Okafor signed it and the luncheon went out without an incident.

1. Explain, using the reading's test, why washing the celery qualified as a critical control point in this specific dish.

2. The class assigned a student monitor and a recorded temperature to each CCP. Identify which HACCP principles those two steps represent and explain why both are needed.

Multiple Choice

1. What does HACCP stand for?

    a) Handling, Cooling, and Cooking Procedures

    b) Hazard Analysis and Critical Control Points

    c) Health and Cleaning Compliance Protocol

    d) Hygiene Assessment for Commercial Cooking Plans

2. What makes a step a critical control point rather than a control point?

    a) It happens before the food is received

    b) It is the most expensive step in the process

    c) It requires a manager to be physically present

    d) No later step can correct a failure there

3. Which of these is an example of a physical hazard?

    a) Norovirus transferred by unwashed hands

    b) A metal shaving from a damaged can opener

    c) Sanitizer mixed at the wrong concentration

    d) Salmonella on the surface of raw poultry

Matching

Write the letter of the correct definition on the line next to each term.

Term	Definition
1. ___ HACCP	A) A step where control is essential because nothing later can fix a failure
2. ___ critical control point	B) Confirming the system works, including calibration and record review
3. ___ critical limit	C) The response decided in advance for when a limit is not met
4. ___ corrective action	D) A prevention system that controls the process instead of inspecting the product
5. ___ verification	E) A measurable boundary that separates safe from unsafe at a given step

Fill-in-the-Blank

1. HACCP was originally developed for the _____ space program.

2. The three hazard categories are biological, chemical, and _____.

3. Principle one is to conduct a _____ analysis of the food flow.

Short Answer

Answer each question in 2-4 complete sentences.

1. Explain why testing finished product samples cannot guarantee that a whole batch is safe.

_____

_____

_____

2. Washing lettuce is a CCP for salad but not for soup. Explain the reasoning behind that difference.

3. Explain why HACCP requires critical limits to be numbers rather than descriptions.