



REDUCED OXYGEN PACKAGING (ROP)

WHAT IS REDUCED OXYGEN PACKAGING?

ROP is a process where the amount of oxygen in a package is reduced to a level below that normally found in the surrounding atmosphere. This can be done in several ways.



Vacuum Packaging

Mechanically evacuate the oxygen from a package of food. Example: use an approved vacuum sealer for storage of potentially hazardous foods.



Sous Vide

Food is placed in a bag, the air is mechanically evacuated, and the food is cooked in a water bath, usually at low temperatures over several hours.



Cook Chill

Boil or heat food to drive off the oxygen. Seal the hot food product in an air-tight container. Food is then chilled in an ice bath or refrigerator.



Canning or Jarring

Boil or heat food to drive off the oxygen. The can/jar is then capped. As food cools, an air-tight vacuum seal is created within the lid of the can/jar.



Modified Atmospheric Packaging and Controlled Atmospheric Packaging

Oxygen in the package is displaced or modified with another gas or combination of gases (mostly done at the wholesale packaging level).

WHY USE ROP AT THE RETAIL LEVEL?

ROP has several advantages at the retail food facility level:

- **Economy.** Extends the shelf life of perishable food by creating an atmosphere unfavorable for the growth of spoilage bacteria.
- **Efficiency.** Reduces both preparation and clean-up times by allowing food to be prepared in advance.
- **Quality.** Creates a tender and/or flavorful food product.

WHAT ARE THE HAZARDS ASSOCIATED WITH ROP?

Using ROP improperly can have serious consequences due to hazards associated with the processes. The lack of oxygen creates an anaerobic environment, which favors the growth of two very dangerous pathogens: *Clostridium botulinum* and *Listeria monocytogenes*.

- *Clostridium botulinum* produces deadly botulism toxin. The toxin attacks the body's nerves and causes a rare but serious condition. Without immediate treatment, the condition has a high fatality rate.
- *Listeria monocytogenes* can cause miscarriage, still birth, and premature delivery in pregnant women. It can be fatal particularly for those at highest risk, e.g., newborns, the elderly, and people with weakened immune systems.
- Both of these bacteria can grow even when food is properly refrigerated.
- Eliminating the bacteria that cause spoilage actually gives these deadly bacteria an advantage to grow and reproduce with no competition.
- Raw, fresh fish presents an even greater hazard due to the presence of naturally occurring bacteria on and inside of the fish. For that reason, raw, fresh fish may only be packaged using ROP at the wholesale level with a HACCP plan under FDA guidelines and inspection. Fish **cannot** be packaged using ROP at the retail level unless it is frozen before, during, and after the packaging process and must still meet the requirements listed in the next section.

WHAT IS REQUIRED TO CONDUCT ROP SAFELY AND LEGALLY AT MY RETAIL FOOD FACILITY ?

Any retail food facility processing potentially hazardous foods using ROP is required to have a Hazardous Analysis Critical Control Point (HACCP) plan approved by the California Department of Public Health (CDPH), Food and Drug Branch (FDB).

- If you do not currently have an approved plan, you must cease and desist ROP processing of food at your facility. You are in violation of California Retail Food Code Section 114419(b).
 - * **Exemption:** Your retail food facility is not required to have an approved HACCP plan for ROP processing of potentially hazardous food if all of the following standards are always met:
 1. The food is labeled with the production time and date.
 2. The food is held at 41° F or lower during refrigerated storage.
 3. The food is removed from its package in the food facility within 48 hours after packaging.
- For information on submitting a HACCP plan for approval, please contact CDPH at (916) 650-6500 or FDBRetail@cdph.ca.gov. Once you receive an approval letter from CDPH, please notify Ventura County Environmental Health Division at (805) 654-2813 to update your facility information.

WHAT ARE THE CONSEQUENCES OF CONTINUING TO PROCESS ROP FOOD WITHOUT AN APPROVED HACCP PLAN?

In addition to potentially endangering your customers' health, the retail food facility continues in violation of California Retail Food Code Section 114419(b). The Ventura County Environmental Health Division may take any or all of the following administrative or legal actions:

• Condemnation of all ROP food product	• Office hearing
• Impound of equipment used for ROP	• Suspension or revocation of your permit to operate
• Notice of Violation	• Citation

WHERE CAN I GET MORE INFORMATION ON ROP AND HACCP PLANS?



- ◆ California Retail Food Code Sections: 113799, 113801, 113883, 114057, 114419
- ◆ [CDPH FDB Retail Food Program](#)
 - ◇ Under Guidelines: [HACCP at Retail \(PDF\)](#)
 - ◇ Under Certificates and Licenses: [Retail Food Program Service Request Application CDPH 8601 \(PDF\)](#)
[HACCP Plan Review Request](#)



- ◆ [Retail & Food Service HACCP](#)