Fact Sheet

Reduced Oxygen Packaging (ROP) is categorized as a special process. The Food and Drug Administration (FDA) Food Code provides the criteria/standards for **Reduced Oxygen Packaging (ROP).**

What is Reduced Oxygen Packaging (ROP): The term ROP can be used to describe any packaging procedure that results in a reduced oxygen level in a sealed package. This can be achieved by removing oxygen; displacing oxygen and replacing it with another gas or combination of gases; or otherwise controlling the oxygen content to a level below that normally found in the atmosphere (approximately 21% at sea level).

Hazards Associated with the ROP Process: Strict management and processing procedures are required due to the hazards associated with the process. *Clostridium botulinum and Listeria monocytogenes are* bacterium are the associated food safety risks.

Types of Reduced Oxygen Packaging:

1. (1) *Cook-chill* is a process that uses a plastic bag filled with hot cooked food from which air has been expelled and which is closed with a plastic or metal crimp.

2. (2) *Controlled Atmosphere Packaging (CAP)* is an active system which continuously maintains the desired atmosphere within a package throughout the shelf-life of a product by the use of agents to bind or scavenge oxygen or a sachet containing compounds to emit a gas. CAP is defined as packaging of a product in a modified atmosphere followed by maintaining subsequent control of that atmosphere.

3. (3) *Modified Atmosphere Packaging (MAP)* is a process that employs a gas flushing and sealing process or reduction of oxygen through respiration of vegetables or microbial action. MAP is defined as packaging of a product in an atmosphere which has had a one-time modification of gaseous composition so that it is different from that of air, which normally contains 78.08% nitrogen, 20.96% oxygen, 0.03% carbon dioxide.

4. (4) *Vacuum Packaging* reduces the amount of air from a package and hermetically seals the package so that a near-perfect vacuum remains inside. A common variation of the process is Vacuum Skin Packaging (VSP). A highly flexible plastic barrier is used by this technology that allows the package to mold itself to the contours of the food being packaged.

Main Purpose of Utilizing ROP Processing at the Retail Level: Extended shelf life of products (specific requirements are required by processor).

Equipment and Packaging Material: Approved commercial equipment and specialized plastic bags and/or containers are required for these processes.

Retail Use: Many retail grocery stores sell ROP products directly to the consumer. Some products are sold raw and some are sold already cooked. However, the products are processed in a manufacturing facility that is inspected by USDA (particularly meat products) or FDA. For example, Wegmens Grocery store sells a variety of raw seasoned chicken and beef products. Such products are not processed using ROP at the store location but is received directly from the manufacturing plant.