

VERMONT AGENCY OF AGRICULTURE FOOD & MARKETS
MEAT INSPECTION SERVICE

POLICY# MI-001A

Effective Date: 8-1-18

Reduced Oxygen Packaging (ROP)

- I. **PURPOSE:** To identify different packaging methods for various products and associated controls to inhibit the growth of pathogens of concern.

- II. **POLICY:** A “variance” is defined as a written document issued by the Agency that authorizes a modification or waiver of one or more requirements of the regulations. If in the opinion of the Agency, a health hazard will not result from employing the activities detailed within the modification or waiver a variance may be granted. The decision to grant or deny a variance request will be based on the best available science submitted by the applicant or sought out by the Agency at the time the decision is made.

- III. **RATIONALE:** Reduced oxygen packaging (ROP) encompasses a large variety of packaging methods where the internal environment of the package contains less than the normal ambient oxygen level (typically 21% at sea level), including vacuum packaging (VP), modified atmosphere packaging (MAP), controlled atmosphere packaging (CAP), cook chill processing (CC), and sous vide (SV). Using ROP methods in food establishments has the advantage of providing extended shelf life to many foods because it inhibits spoilage organisms that are typically aerobic. ROP may also offer benefits related to time and labor savings, portion control and quality retention. However, ROP can also increase the potential for the growth of certain pathogens in the absence of the growth of competing spoilage organisms. For example, if certain controls are not in place, the formation of *C. botulinum* toxin may occur before spoilage renders the product unacceptable to the consumer.
The type of food, the production and packaging methods used, and the packaging material can impact the level of oxygen present within a package and within the food matrix. Combinations of some or all of these variables may result in an oxygen level within a package, or within a food matrix, that is less than 21%. While ROP may involve different foods and different packaging materials, each process is characterized by the deliberate removal of oxygen from or the reduction in the oxygen level in the package or the food matrix at the time of packaging. Certain foodborne pathogens that are anaerobes or facultative anaerobes are able to multiply under either aerobic or anaerobic conditions. Therefore special controls are necessary to control their growth. Refrigerated storage temperatures of 5°C (41°F) may be adequate to prevent growth and/or toxin production of some pathogenic microorganisms but non-proteolytic *C. botulinum* and *L. monocytogenes* are able to multiply well below 5°C (41°F). For this reason, *C. botulinum* and *L. monocytogenes* are the pathogens of concern for ROP. Controlling their growth will control the growth of other foodborne pathogens as well.