

POTENTIAL APPLICATIONS OF OZONE FOR INCREASING STORAGE TIME OF PERISHABLE FOODS

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Problem Addressed

During transportation and storage of perishable foods, considerable losses occur due to spoilage. Part of this spoilage is caused by microorganism activity, but fruit spoilage is accelerated by ethylene which evolves during the ripening process. These losses due to spoilage are costly from the standpoint of lost income.

Methodology Used

Literature is being searched and discussions are being held with Europeans who currently use ozone for preservation of foods to obtain a data base background. Positions of regulatory agencies are being defined. Current research studies in the USA are being followed. Newly available ozonation equipment (compact, operator-free with minimum service, and low cost) will be incorporated into experiments designed to prove the efficacy of the technique with respect to preservation of fresh fish, eggs, cheese, fruits, vegetables and some meats. Data to support or deny possible acceleration of rancidity after ozonation will be gathered in a scientific manner.

Major Findings and Their Significance to Food Distribution

The recent advent of compact, portable and low cost ozone generation equipment has rekindled interest in the use of the powerful bactericide, ozone, to retard spoilage of fresh fish. If "sterilized ice" is successful in preserving fresh fish without introducing detrimental side effects (tastes, odors, rancidity, etc.), there is potential for producing "sterilized ice" at all points in the food chain, from the point of catch aboard ship to the retail store.

Ozone also is known to react rapidly with ethylene, which is evolved by ripening fruits. As ethylene evolves, it then accelerates the ripening process. Recent introduction of small battery powered ozone generators has sparked the concept of a self-contained system for trucks and railcars. Air inside the vehicle compartment (or containerized modules) housing the fruits would be ozonized during transit, thus destroying ethylene as it is evolved, and prolonging the ripening time. If transportation in an ozonized atmosphere is successful, the fruit could be harvested at a later stage, but should attain the same degree of ripeness when displayed, with improved taste at the point of consumption.