

ENERGY-RELATED INVENTIONS PROGRAM

Packaging and Shipping Fresh Produce without Refrigeration

With the support of a DOE grant for laboratory studies and field testing, an inventor has developed a packaging technology that makes interstate shipment of fruits and vegetables possible without refrigeration. To date, this system has been used to penetrate the fresh tomato market in 39 states. The tomatoes are packed in a shrink-wrap plastic-covered box with a filter enclosed that allows them to ripen in a controlled environment with a temperature that ranges from 68 to 72 F. The purifier effectively regulates the levels of carbon dioxide, oxygen and the relative humidity surrounding the tomatoes in shipment, slowing down the ripening process and

eliminating the need for refrigeration. Because of different environmental temperatures, some heating or refrigeration may still be required, but the amount of energy consumed will be substantially reduced. Marketed under the trade name of "TomAHtoes," 751,000 25-pound boxes were shipped in 1987, with \$35 million in retail sales. With its potential for use with other fresh fruits and vegetables, this innovative packaging can provide significant national energy savings.

Aluminum Chip Roofing System

With the support of a DOE grant, a small company was able to use a product it was already manufacturing, aluminum chips, to develop new energy-



Packaging technology developed through the Energy-Related Inventions Program allows tomatoes to ripen slowly when shipped at room temperature.