

# The Benign Hamburger

by

Graham Peaslee, Chemistry Department, Hope College, Holland, MI

Juliette M. Lantz, Chemistry Department, Siena College, Loudonville, NY

Mary M. Walczak, Chemistry Department, St. Olaf College, Northfield, MN



“How do you explain the fact that for more than thirty years we’ve been selling hamburgers without a problem then all of a sudden—*Bam!*—this happens,” were the first words out of Rodney McDougall’s mouth as the meeting began. McDougall, President and CEO of Jill-at-the-Grill hamburgers, had just flown into Seattle for an emergency crisis management meeting. “Can you give us an update on the situation, Bill?”

Bill Copeland, the regional manager for the sixty Jill-at-the-Grill restaurants in the State of Washington, said with a worried expression, “Well, I’m afraid the situation is grim. A four-year-old boy died this morning and a nine-year-old girl is fighting for her life in the intensive care wing of Children’s Hospital. Two hundred additional cases of food poisoning have been reported and the State’s chief epidemiologist has traced all these occurrences to a batch of contaminated frozen beef patties distributed two weeks ago throughout our chain.”

“What we’re dealing with here is the *E. coli* bacterium,” said Sal Menelli, the company’s senior toxicologist. “Sixteen people have died from this new strain of *E. coli* O157:H7 in the last ten years in the United States in other outbreaks. We’ve been fortunate not to be hit until now.”

“Well, we’ve really been hit. Our stock has lost 30% of its value in the last two days, and the media is having a field day. If we don’t turn this around within 24 hours it will spell financial catastrophe for Jill-at-the-Grill,” groaned Walter Hereford, Jr., the company’s Vice President of Finance.

“What steps can we take to prevent this from ever happening again?” asked Rodney. “Can we salvage any of our image that we have worked so hard to maintain?”

“As far as steps we can take, we have already increased the temperature at which we cook the meat,” said Bill. “I say we lab test one burger out of every batch.”

“Not only is the cost of that prohibitively high, but we would have no assurance that another patty in that batch wasn’t contaminated,” rebutted Walter.

“A small temperature increase is not going to help. This strain of *E. coli* may not be totally wiped out on heating to even 170 degrees at this level of contamination,” said Sal.

“Besides,” added Walter, “changing the temperature is not something the public will recognize as a serious response.”

Rodney stood up and paced toward the windows. “To think that something as benign as a hamburger can kill a kid is just startling. Our customers’ well-being has always been a high priority. We have always been an industry leader in this area. We were the first to adopt recyclable packaging. The first to stop using beef tallow to fry our fries.”

After a minute of silence, Sal volunteered, “There is a controversial suggestion that we’ve been working on in the Process Development Laboratory at company headquarters. I’d like to introduce Dr. Rebecca Pike who has led our recent efforts.”

Rebecca began, “My thesis work involved examining the effects of gamma irradiation on foodstuffs. In my research lab at Jill-at-the-Grill we have extended this work to focus on beef. My results show that bacteria are effectively killed by this process, but the meat remains safe to eat.”

“What exactly is involved in ‘gamma irradiation’? Is it like cooking the meat with a microwave?” asked Rodney.

“No, not at all. The basic process involves passing high energy electromagnetic radiation called gamma rays through the food. Most of the gamma rays pass through the food without interacting with it. Enough photons interact with the matter, however, to break bonds within the molecules. This effectively kills bacteria or at least prevents their rapid multiplication, which will lead to the eradication of disease-causing bacteria.”

“Now, wait a minute,” Bill interjected. “Are you talking about nuking the food? I’m not serving glowing food to my customers, and there is no way that I’m going to expose my employees to radioactivity! That’ll really help our public image.”

“There is controversy surrounding this process, it’s true,” Rebecca replied patiently. “In fact, Syracuse University’s food service just banned irradiated food. However, the scientific facts are clear. Irradiating the food leaves no traces of radioactivity. My research with beef has indicated no increased free radical production over normal aged beef. The process has been endorsed by the UN World Health Organization and the UN Food and Agriculture Organization. In the U.S. it is already being used for poultry, pork, and a variety of fruits, vegetables, and grains. Besides, many of the spices in our products are already irradiated.”

“Yes, the American Consumer Association is promoting this process. In fact, I got a FAX just this morning from them,” added Walter. “This process has the advantage of increasing shelf life which decreases losses due to waste. In addition, there are several new companies setting up irradiation facilities nationwide. We have an opportunity to be the first fast food chain to buy into this technology while it is still new.”

“Well, I got a FAX today too,” said Bill. “The ‘Radically Against Radiation’ organization has threatened to picket my restaurants if we adopt food irradiation. They seem to think the testing has been inadequate. What if the general public has a similar response to irradiated hamburgers? Besides, I’m skeptical that our managers would go for this.”

“We have to make some statement tomorrow to the press,” Rodney insisted. “We can’t afford to make a mistake. Could this food irradiation option salvage our ruined image in the eyes of the public? Or would adopting this process destroy our image beyond repair?”



Licensed image of hamburger girl © elpino0921 - Fotolia.com, ID #43724916. Case copyright held by the **National Center for Case Study Teaching in Science**, University at Buffalo, State University of New York. Originally published June 21, 1999. Please see our **usage guidelines**, which outline our policy concerning permissible reproduction of this work.



Mr. Walter Hereford, Jr.  
Vice President of Finance  
Jill-at-the-Grill Hamburgers  
10021 Parkland Avenue  
Chicago, IL 60624

Dear Mr. Hereford:

Let me first offer my condolences regarding the recent tragedy involving patrons of your restaurants.

Outbreaks of the responsible pathogen, *Escherichia coli* O157:H7, have increased recently and affect between 7,000 and 20,000 Americans each year at a cost of \$174.3 to \$467.7 million. Unfortunate as your experience is, it is becoming more and more common.

Fortunately, there is now an alternative. The Food and Drug Administration has just added beef to the list of foods approved for processing using irradiation. This proven technology has already been used to kill pathogens in pork and poultry, and the market for such meats is brisk. The level of pathogens in raw poultry can be reduced 99.9% by a single low dose of radiation.

Irradiation of food is a safe method that does not leave residual radioactivity in the food. Food treated in this way is completely safe for human consumption as has been shown by over forty years of animal and human studies, including one in which humans consuming 100% of their diet in irradiated food showed no ill effect.

If you would like further information on the technology of food irradiation feel free to contact me. You can also find the American Dietetic Association's position on this matter at: <http://www.journals.elsevierhealth.com/periodicals/yjada/article/S0002-8223%2800%2900075-4/fulltext>.

Sincerely,

*Elizabeth Sweet*

Elizabeth Sweet, Ph.D., RD  
President



R.  
A.  
R.

Radically Against Radiation  
PO Box 55671  
Washington, DC 11111

William Copeland, Regional Manager  
Jill-at-the-Grill  
933 Rainier Drive  
Seattle, WA 93301

Dear Mr. Copeland,

We are saddened by the sudden and tragic deaths of your customers due to the consumption of TAINTED BEEF sold by your franchise. Have you considered that you may have been set up by members of the U.S. government in their efforts to promote food irradiation processes that kill harmful bacteria and microbes? While their methods of bringing forth their cause are UNSCRUPULOUS, their reasons for promoting this food zapping technique are even worse. They are merely trying to turn the chief liability of the nuclear industry (radioactive waste) into an asset—they would market their nuclear waste, even franchise it. They are trying to put a positive image on the dangerous nuclear industry. Note that the Department of Energy is a strong proponent of food irradiation.

We are lobbying the FDA and all branches of the U.S. government to prohibit all uses of non-medical radiation. These uses of radiation do not save lives - they SHORTEN them. In the case of food irradiation warning signs of BOTULISM such as food odor are eliminated, dramatically increasing the risks of death. Botulism aside, irradiated food is unsafe to eat due to the TOXIC CHEMICAL SPECIES that are generated, but the FDA refuses to do adequate testing in these areas. Irradiation also REDUCES the nutritional value of food. It is clearly not the answer to world hunger that the politicians portray it as.

RESIST the urge to adopt radiation policies. THE LIVES OF THE REST OF YOUR MILLIONS OF CUSTOMERS DEPEND ON IT.

*"Radically Against Radiation (RAR)"  
People shedding light on  
the irradiation issue.*

*P.S. Should you disregard our advice, we will see you every morning on the way into your office. We will be the ones in the picket line...*