Safe Processing, Safe Food: Food Processing Infosheets for Extension Educators

Abstract
An infosheet series titled Safe Processing, Safe Food has been developed and branded. The series is composed of peer-reviewed infosheets depicting conventional and emerging food processing technologies (FPTs) used to make foods safer. The goals of developing the infosheet series were to help Extension educators and, subsequently, the general public become more aware of FPTs and to dispel common myths associated with them. Extension educators can use the infosheets to familiarize themselves with the science and application of FPTs and can disseminate the infosheets to clientele such as small-scale agricultural producers, processors, and consumers.

Keywords: infosheets, food processing technologies, food safety, Extension educators, educational materials

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Introduction

Food processing technologies (FPTs) are evolving (Bridges, Rane, & Wu, 2018; Hertrich, Boyd, Sites, & Niemira, 2017; Huang & Chen, 2019). Despite the fact that FPTs are used to make foods safer, consumers have expressed negative perceptions of the term food processing and of different FPTs themselves (Bruhn, 2007; Cardello, 2003; Cardello, Schutz, & Lesher, 2007; Naqvi, 2011). For these reasons, Extension clientele, such as small-scale agricultural producers, processors, and consumers, may seek out information about FPTs. Because the science associated with FPTs can be complex, Extension educators need succinct information that is easy to interpret and understand that they can use to educate themselves and their clientele. To this end, we developed FPT infosheets to help Extension educators and, subsequently, the general public become more aware of FPTs and to dispel common myths associated with them.

Food safety information should be tailored to specific audiences/groups of people; food safety infosheets have proved to be an effective means of communication for experts, operators, and food handlers (Chapman, MacLaurin, & Powell, 2011). Although the term infosheet does not have a distinct definition, we aimed to develop concise and descriptive documents that provide easy-to-digest, science-based information. By using FPT infosheets, Extension educators can feel confident that they are obtaining and sharing with their constituents accurate and up-to-date food processing information.
Infosheet Development

We created a *Safe Processing, Safe Food* infosheet series. The first infosheet in the series summarizes general "food processing," and the remaining infosheets introduce conventional FPTs (pasteurization, microwave technology, high-pressure processing, and irradiation) and emerging FPTs (cold plasma, chlorine dioxide gas, ozone gas, and pulsed light).

Effective educational materials are written in active voice, have a positive tone, and comprise familiar wording and terminology (Niebaum, Cunningham-Sabo, & Bellows, 2015). In a focus group study evaluating food safety infosheets for food handlers, participants identified negative characteristics of infosheets, such as heavy text, extensive length, lack of visual appeal (color and pictures), and lack of context for food safety information (Chapman et al., 2011). As a result of attention to such findings, we developed infosheets that are no more than two pages in length and contain graphics. We also incorporated photos of the FPTs and their usages to provide context for how the technologies can be used. Inclusion of visuals in the infosheets can help Extension educators and their clientele envision food processes they may never have seen before. For ease of reading, each infosheet is divided into distinct sections—Background, How It Works, Technology, Efficacy, Benefits, and Current Usage (Table 1).

| Table 1.  |
| ____________________________ | ____________________________ |
| **Safe Processing, Safe Food Infosheet Sections** |

<table>
<thead>
<tr>
<th>Section title</th>
<th>Description</th>
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<tbody>
<tr>
<td>Background</td>
<td>Section provides general information about the FPT and associated nomenclature, history, and visual characteristics.</td>
</tr>
<tr>
<td>How It Works</td>
<td>Section describes how the technology is used and the mechanism by which the technology/method kills food-borne pathogens.</td>
</tr>
<tr>
<td>Technology</td>
<td>Section elaborates on the types of equipment used for different variations of product and packaging.</td>
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<tr>
<td>Efficacy</td>
<td>Section explains how well the FPT works on different foods, including the FPT's capabilities in killing pathogens and the FPT's limitations.</td>
</tr>
<tr>
<td>Benefits</td>
<td>Section compares the FPT to other methods and explains why an individual/group may choose to use the technology.</td>
</tr>
<tr>
<td>Current Usage</td>
<td>Section describes which types of foods and processes the FPT has been approved for by governmental agencies and acknowledges research that is still needed.</td>
</tr>
</tbody>
</table>

Creation of a Logo

To brand the series, we enlisted a graphic designer to develop a logo. Based on previously identified negative associations with the term/concept of "food processing" (e.g., unnatural, unhealthful, harmful), our goal was to create a logo that portrayed food processing in a nonthreatening manner (Bruhn, 2007;
Cardello et al., 2007; Naqvi, 2011). Iterations of the logo were shared with consumers and Extension specialists/personnel for feedback; some were aware of the context (i.e., that development of the logo was affiliated with a grant promoting emerging FPTs), whereas others were unaware. From the feedback we received, we settled on a final logo depicting an apple being processed to become applesauce (Figure 1).

**Figure 1.**
Finalized Safe Processing, Safe Food Logo

Peer Review

Each infosheet in the series underwent the Virginia Cooperative Extension (VCE) publication peer review process. Extension educators were involved in the review of the infosheets to ensure comprehensibility and feasibility of use. In addition to the VCE internal peer review process, we collaborated with research scientists working directly with FPTs to ascertain the scientific merit and completeness of the infosheets.

An example of a peer-reviewed infosheet in the Safe Processing, Safe Food series—titled How is Cold Plasma Used to Process Food?—is shown in Figure 2.
Extension educators can use the infosheets series described here to become more familiar with the science and application of conventionally used and emerging FPTs. Because we designed the infosheets with the
general public in mind, they also are appropriate for dissemination to clientele who have questions about food processing and specific FPTs. Extension educators also can adapt the FPT infosheets and information contained therein to address needs unique to their clientele.

The peer-reviewed FPT infosheets are available at VCE's Publications and Educational Resources webpage: https://www.pubs.ext.vt.edu.

Acknowledgments

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Author Note

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References


