

By Barbara L. Marteny and Kristin Safran, National Testing Laboratories, Ltd.

Troubleshooting Bottled Water Complaints

Customer complaints are an unfortunate but unavoidable part of business. Bottled water complaints typically arise when a customer perceives an off taste, odor or appearance in the water. In most cases, the customer or customer's family has consumed some of the water before the problem is detected. As a result, their primary reason for calling is to find out

- What did they drink?
- How did it get there?
- How will it effect their health?

These are questions that should be equally important to the bottler for reasons of public safety as well as protection of the business.

information from the customer. While not all encompassing, we recommend beginning with the following questions to the customer.

- What is the customer's complaint (off taste, off odor, off appearance)?
- What is their best comparison to the problem they perceive (tastes like, smells like or looks like)?
- What is the brand name and product type?
- What is the container size, type of container, type of closure?
- What is the production code?
- When did the customer purchase the container?
- Where did the customer purchase the container?

Gathering information, the most important step, starts with obtaining information from the customer.

Unfortunately, the source of off taste, odor and/or appearance often can be difficult to identify. There is no single analytical method or piece of equipment in which you can inject a small quantity of water and out comes identification of the culprit. Identifying a product problem often is a complex and frustrating process. The purpose of this article is to cover the first two steps of the problem solving process and offer some tools that bottlers can utilize when troubleshooting these issues.

Overview of the Problem Solving Process

Troubleshooting quality control issues for bottled water follows the same problem solving process as any other industry. The four steps are

- Gather information,
- Analyze and confirm findings (cause and effect diagram),
- Take corrective action plan, and
- Verify corrective action has resulted in desired effect

Step One—Gather Information

Gathering information, the most important step, starts with obtaining

- When was the bottle opened?
- Was the "off" taste, odor or color immediately apparent upon opening/purchasing or did it develop gradually?
- Is the "off" taste, odor or color still as strong or has it dissipated over time?
- Do they still have the bottle in question? If so, will they give it to you to help in your investigation?
- How/where has the water been stored?

Note: Remember to get the customer's name, address and telephone number.

Production code information also can help by narrowing the initial focus to the production code(s) affected so applicable quality control, personnel and maintenance records can be obtained. When addressing the "What is it?" question in step two, answers to the above questions can help identify whether the product compliant is potentially microbiological, inorganic or organic in nature.

For example, if an odor was apparent immediately after opening but dissipated

Figure 1: Cause & Effect Diagram – Suspected Algae or Mold



over time the problem may be a volatile organic chemical. Although, if the odor dissipated over time and the product was less than 48 hours old when the customer opened the bottle, it is possible that the ozone (an inorganic) had not completely dissipated prior to opening the container. If the odor wasn't present upon opening but developed over time, storage conditions (volatile organic or microbiological) may be the culprit.

Step 2: Analyze & Confirm

The next step is to analyze all the data obtained from the customer along with in-house records that trace the product from production of raw materials through the bottling process and distribution system to the time the complaint was identified by the consumer.

A cause and affect diagram can assist in the brainstorming process. Potential causes then should be narrowed in focus until a short list of most likely causes is developed. Depending on the cause(s), verification can be done through either analytical testing or attempts to replicate the suspected cause and effect.

A Hypothetical Situation

A customer calls to complain that they have "green stuff" growing inside their

five gallon bottle. After the initial gathering of information from the customer, you suspect that the culprit is algae or mold. You request the consumer allow you to pick up the product to send to an independent laboratory for analysis. While the laboratory is analyzing the sample you do a cause effect diagram. (See Figures 1 and 2).

Effect—consumer complaint. Suspected algae or mold in returnable bottle.

Potential causes of product quality problem.

- **Equipment**—blow molding equipment, bottle washer
 - Contamination due to improper parts or insufficient sanitation
 - One-micron absolute/HEPA filtration not in place or not functioning efficiently for process water, tanker, holding tank and filler room air
 - Deionized water for bottle rinsing
- **Personnel**
 - Failure to inspect bottles going into washer for green or brown stains
 - Failure to discard returned bottles with signs of algae/mold
 - Failure to detect odors in bottles

going into washer

- **Raw Materials**
 - Algae/mold in source water
 - Algae/mold in bottle or cap rinse water
 - Contaminated returned bottles or water coolers
 - Contaminated pre-forms
- **Procedures**
 - Insufficient or unclear procedures regarding material handling, cooler sanitation, bottle inspection, equipment cleaning and sanitation, tanker maintenance/sanititation or product storage and distribution
- **Environment**
 - Air contamination through vents or air intakes of the tanker, storage tanks, water cooler, ozone generators or facility air

may not be all encompassing. Other sources of contamination unique to your plant and process may exist.

Product quality issues involving off taste, odor or appearance are either microbiological (bacteria, yeast, molds, algae), organic (volatile organic chemicals, plasticizers) or inorganic (metals, ozone). Putting together a customized problem-solving process that fits your business before there is a problem will help you be prepared to efficiently address issues as soon as they arise or even avoid them in the first place. **WQP**

About the Authors

Barbara L. Marteny and Kristin M. Safran, of National Testing Laboratories, Ltd., specialize in consulting with bottled water companies regarding testing requirements. They maintain contacts with bottled water regulators, industry associations, and the FDA regarding regulatory changes and bottled water issues. They have authored numerous articles and given presentations regarding state, federal and international bottled water regulations.

Marteny and Safran can be reached by phone at 800-458-3330 or 440-449-2525. Marteny at extension 217 and Safran at extension 215. E-mail food-bev@watercheck.com

Effect—Consumer complaint. Suspected chemical contamination

Potential causes of product quality problem.

- **Equipment**—carbon beds, softeners, RO units, ozone units, UV lights, blow molding equipment, filler heads
 - Mechanical failure due to manufacturing defects or improper/insufficient maintenance
 - Contamination due to improper parts or insufficient sanitation
- **Personnel**
 - Insufficient training
 - Poor personal hygiene
 - Poor management supervision
- **Raw Materials**
 - Defective or contaminated packaging materials: bottles, caps, pre-forms, safety liners
 - Defective or contaminated ingredients: source water, minerals
 - Defective or inappropriate cleaners
- **Procedures**
 - Insufficient or unclear mechanical procedures: equipment maintenance
 - Insufficient or unclear operating procedures: sanitation, material handling, production process, quality control sampling or record keeping

For more information on this subject, write in 1016 on the reader service card.

Figure 2: Cause & Effect Diagram – Suspected Chemical Contamination



- **Environment**
 - Raw material supplier
 - Transportation of raw materials
 - Storage areas at the plant
 - Process areas
 - Filler room
 - Ventilation system
 - Plant grounds
 - Source recharge area
 - Transportation and storage of finished product after it leaves the plant

These sample cause and effect diagrams