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# Engendering Behavior Change Through Single-Session Workshops: Lessons Learned from Extension's Private Well Initiative

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**Abstract:** Based on a follow-up mail survey conducted in 2009, we found that structured, one-time workshops can influence and impact participant behavior change. Survey results suggest that brief workshops, staffed by key resource personnel, can have a powerful influence on participant behavior change and fill an important gap in rural drinking water protection. As a result of these educational workshops, we have learned that single-session workshops with supporting materials can encourage: (1) Testing of drinking water wells, (2) Contacting resource experts for more information and assistance, and (3) Sharing management information with other private well owners.

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## Introduction

Protection of municipal drinking water has received increasing attention in recent years, with water suppliers now required to test, report, and treat for numerous water quality contaminants (U.S. EPA 1974,1986,1996). Surprisingly, private wells, which serve 10 - 15% of the U.S. population, are not protected under the Safe Drinking Water Act or other federal programs (DeSimone, 2008; U.S. EPA, 2010). Private well owners are largely responsible for ensuring that their well water is safe to drink (Swistock, Sharpe, & Dickison, 2001).

Protection of private wells poses substantial challenges. Many of the common drinking water contaminants like pathogens and nitrate-nitrogen are odorless, colorless, and tasteless. Because of the large number and widespread presence of potential sources of contaminants, such as petroleum products from leaky tanks,

naturally-occurring contaminants, and pesticides and fertilizers, site inspection and regular water quality testing are key elements in protecting the safety of drinking water from private wells (DeSimone, 2008). However, routine private well testing and subsequent treatment if problems are found largely rely on the voluntary decision by millions of household residents to invest their time and money. Focus group studies and a mail survey conducted by Jones et al. (2005, 2006), found that private well owners valued educational programs that address private well testing and protection.

Promotion of private well protection and testing has been the focus of Extension programs for many years (Swistock, Sharpe, & Dickison, 2001; Lemley & Wagenet, 1993). Since 1993, the University of Rhode Island Cooperative Extension Water Quality Program has partnered with the Rhode Island Department of Health (RI DOH) and the Rhode Island Department of Environmental Management to educate and motivate the state's private well owners to test, treat, and protect their drinking water. Given the large number of Rhode Islanders (100,000) who rely on private wells, the program has centered on offering six – eight single-session workshops per year to residents in locales throughout the state.

Although Pratt and Bowman (2008), suggest that multi-session workshops are necessary to generate voluntary behavior change, we found that one-time workshops are attractive to private well owners and can engender behavior change that frequently results in appropriate well testing and protection efforts. Our workshops were brief, structured presentations that focused on specific behaviors and incorporated professionals from the private and public sectors as instructors and resource staff. Supplementary programmatic deliverables like direct mail brochures, phone and email consultation, and additional resources available on our website were also created to support participants in adopting a behavior change (Clements, 1999). Here, we offer an overview of the program structure and resources of these one-time workshops along with assessment results.

## Workshop Approach

Using a Home\*A\*Syst–based approach (Castelnuovo, 1999), an active-learning process that seeks to engage participants in site-specific activities at their residence, the University of Rhode Island Extension program provides private well protection educational opportunities and materials for Rhode Island residents. The Home\*A\*Syst approach has been successful in empowering well owners to protect groundwater and their drinking water well (Simpson, 2001). We use Logic Model (University of Wisconsin, 2002) planning to guide the development, delivery, and evaluation of our private well water education program (McCann, Peterson, & Gold, 2009). The program's goals are to motivate private well owners to take actions to test and protect their drinking water and to coordinate and promote involvement by the public and private sectors in private well protection. Ultimately, our most important outcome is that private well owners have their drinking water well tested every year. Programmatic elements directed specifically towards private well owners include:

- Community workshops focused on private well testing and protection
- A series of 33 factsheets on testing, contaminants, treatment systems, and protection techniques written with RI DOH staff
- A website that provides all workshop materials free of charge and links to all appropriate resource agencies
- An informational display that is set up in public places throughout the state
- Direct mail pieces are periodically distributed, written in conjunction with RI DOH staff

- Phone and email consultation by both URI and RI DOH staff

Community workshops are the core element of this private well protection program. With colleagues from RI Department of Health, we have conducted six – eight single-session workshops per year in communities whose residents rely primarily on private wells for their drinking water. Workshop attendance is voluntary. We are struck by the fact that there continues to be demand as these voluntary workshops have been consistently attended over the past 17 years and even draw repeat participants who bring a friend or family member.

These workshops were held in the evening for 2 hours and included a presentation and discussion on:

- Groundwater movement and contaminant movement
- Types of wells, relative contamination risks and proper well siting
- Common sources, types and human health risks of groundwater contaminants
- When, where and what to test
- Best management practices for private well water protection
- Home water treatment
- Where to obtain additional information

Participants received a package of information including contact information for presenters, a copy of the slide presentation, a list of state certified drinking water testing labs, and a testing schedule. Supplementary factsheets were made available on particular pollutants of concern and drinking water treatment methods. Ample time was provided for questions and interaction with staff from both URI Cooperative Extension and the RI Department of Health. Private sector representatives from relevant businesses participated as resources staff. Jones et al. (2005) found in their research that convenient testing procedures encourage the private well owner to follow through on testing. Thus, we included a speaker from a private, state-certified lab to offer residents the capacity to pick up a testing kit, instructions, and price list at the workshop. In addition, we also included a registered well driller (Rhode Island Department of Environmental Management, 1989) who was a member of the Rhode Island Ground Water Association to answer questions about well maintenance and repair.

At the end of the workshop, participants completed an evaluation to provide immediate feedback about the usefulness of the workshop elements and what they intend to do to protect their drinking water quality as a result of what they learned. Table 1 includes a selection of the post-workshop evaluation questions and most common responses.

**Table 1.**  
Post-Workshop Evaluation Questions

**1. What do you consider to be the most important topic in the workshop?**

**Top 3 responses include:**

- Private well testing – what to test for and when

- Information on contaminants – including their sources and appropriate distance for the well
- Maintenance and well protection

**2. What do you consider to be the least important topic in the workshop?****Top 3 responses:**

- Groundwater movement demonstration
- Description of well types
- Schematic of well types

**3. Is there anything you will do differently at home to protect your drinking water well as a result of being here today?****Top 3 responses:**

- Have well water tested regularly
- Maintain well, including a wellhead inspection
- Move contamination sources away from the wellhead (pets, cars, compost piles)

Responses to the post-workshop evaluation demonstrated that workshop participants were highly motivated to take action to protect their drinking water. They were most interested in obtaining specific information about well testing, maintenance, and protection. They proved to be least interested in the conceptual knowledge that underlies the need for regular testing, e.g., groundwater hydrology, types of well construction, and contaminant movement. Based on these responses, we modified the presentation, spending less time on these topics and discussing them in less detail. For example, prior to conducting the survey, we showed a 15-minute video on groundwater movement and how contaminants move into groundwater. We no longer show the video and instead have condensed this to one slide. This has shortened the presentation and allows more time for questions and discussion.

## Follow-up Survey Methodology and Questions

During the summer of 2009, we sent a mail survey to 656 workshop participants who had attended a workshop between January 2004 and May 2009. One hundred and eighty nine surveys were returned, a 28% return rate.

The survey explored the actions that participants took to protect their private drinking water well as a result of attending the workshop. The survey design utilized principles to maximize responses and modified Dillman's Tailored Design Method (Dillman, 2000). Surveys were sent with a postage paid return envelope. Individuals received the survey only once.

There were 22 questions on the survey that can be grouped into three categories:

- Well water testing and treatment
- Good housekeeping practices for water quality protection
- Made additional contacts for more information or to share what they learned

Survey results are summarized in Table 2 below. The behaviors reported here occurred as a result of attending the workshop.

**Table 2.**  
Key Survey Results by Category

<b>1. Had well water tested and/or addressed water system maintenance</b>
51% had well water tested.
28% located the well.
71% conducted a wellhead inspection.
22% had a water treatment system installed.
22% had maintenance performed on the water treatment system.
<b>2. Adopted practices for water quality protection</b>
45% had septic system pumped or inspected.
58% took household hazardous waste to a hazardous waste collection.
38% began using non-toxic alternatives to household hazardous waste.
36% disposed of used motor oil in the oil igloo at the dump/transfer station.
65% who are pet owners relocated and/or removed pet(s) or their waste from area around well.
15% changed the use of fertilizers and pesticides around the well.
3% installed backflow prevention on outdoor faucets.
<b>3. Requested more information or shared what they learned</b>
54% shared workshop information with others.
87% contacted either the RI Department of Health or URI after the workshop for more information.

## Lessons Learned

We found that these structured, one-time workshops can influence and impact behavior change. Workshop participants took actions to protect their drinking water. Based on the work of Clements (1999) and Gordon (2002), our workshops included elements of risk communication, environmental conditions, and the costs and benefits of testing to encourage behavior change. In particular, we discussed simple risk-assessment techniques that participants could employ, (based on our Home\*A\*Syst approach), such as standing beside their well and assessing potential groundwater threats within a 25-foot radius. To address risk management, we asked participants to consider making changes to any identified threats that could

help protect their drinking water well.

As a result of these educational workshops, we have learned that single-session workshops with supporting materials can encourage:

1. Testing of drinking water wells.
2. Contacting resource experts for more information and assistance.
3. Sharing management information with other private well owners.
4. Adopting best management practices to protect their drinking water well.

Our survey results illustrated that 87% of workshop participants contacted a resource professional for follow up information, suggesting that the presence of professionals at small group gathering is an effective way for private citizens to access appropriate experts without maneuvering through large bureaucracies.

## Room for Improvement

We use survey results to improve and refine the workshop. For example, only 3% of survey respondents installed back flow prevention on outside faucets, an inexpensive measure that is very effective at reducing contamination risk (Tyson, 1993). Unlike many of the other protection tips discussed in the workshop, this one is not mentioned until the very end and is included in a list of protection tips, most of which we have already discussed. We now highlight this measure earlier in the workshop and emphasize its risk management value.

The survey included space for additional comments. The most common comment concerned the expense of testing drinking. Although we discuss testing costs and compare it to the cost of paying a public water bill, there are many other home expenses competing for our audience's financial resources. We are engaging our partner organizations in discussions to seek approaches to overcome this barrier for all private well owners.

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