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Aquaphobia

Most rural communities contain independent people who enjoy certain freedoms not experienced by those in major cities and urban areas, such as control of their own water supply. Rural inhabitants get their water from private wells located on their property. These wells can be a benefit of rural living; however, lack of knowledge about water quality negatively affects the rural population and in turn creates irrational fears of governmental control of water rights due to unsafe water. Or to put it another way in a quote attributed to author Mark Twain stated, "*Whiskey's for drinking and water is for fighting over.*" (Schmidt)

A rural community is a group or population living in a country atmosphere and for many, it is a home in the country with gardens, animals and a self sufficient way of life. It is the fulfillment of the American dream for some. Because of the distances between homes in some of these communities, having a water system that serves multiple homes is not economically feasible, but there may be a substantial amount of water in underground aquifers which can be tapped into by having a contractor drill a water well, install a pump and use that source to supply water to a home or farm. A well with as much refreshing water as can be pumped is what is desired, but some of these wells may

not be safe even though they look clean, clear, and pure. Constituents are a part or element in the water that may or may not be considered a contaminant. If the levels are high enough they can have adverse health effects. They come from different sources, some natural, some manmade.

The first attempt to protect the water supply from pollution concerns was the Federal Water Pollution Control Act, enacted by Congress in 1948. This Act was significantly reorganized and expanded in 1972. The Clean Water Act became the common name. With the additional amendments, it also set regulations to govern pollutants discharged into surface waters. The next act to regulate the waters used by the public was the Safe Drinking Water Act or SDWA of 1974. *"The SDWA was established to protect the quality of drinking water in the U.S. and this law focuses on all waters potentially or actually used for drinking use, whether from above ground or underground sources. The act authorized the Environmental Protection Agency or EPA to establish minimum standards to protect tap waters and requires all owners or operators of public water systems to comply with these primary, health related, standards."* (EPA .gov). A business serving drinking water with its own well or water systems with five or more homes connected to the system are regulated in the SDWA. Wells on private property in rural areas are not included under these regulations.

The SDWA regulations for water systems set the levels of contaminants allowed in the drinking water supplied to the population. The contaminants are continually monitored through samples taken of the water and tested by certified laboratories at frequencies also determined by levels of contamination. After test monitoring has been completed for the year, a report, known as a Consumer Confidence Report or CCR, is

supplied to the population of the water system on an annual basis, the CCR explains what constituents are found in the water, the levels found, where the constituent comes from in the environment, what health effects may be caused by consumption such as gastrointestinal problems, carcinogens and many others too numerous to mention. Also described in the CCR are what measures are being taken to correct any problems found in the system. Jane Robinson, a water consumer, thought the water in Santa Fe, New Mexico was safe to drink right out of the tap until she read news reports that some contaminants in the city's water exceeded health guidelines, *"I was really surprised, I always thought water coming from the mountains was clean and pure. She started using her Brita filter just to play it safe"* (Matlock). Levels of contaminants and /or type of bacteria, govern the types of treatment processes that the water may or may not have to go through to make it safe for human consumption and a Brita type of filter is sometimes not adequate. *"Water has many important uses and each requires a specific level of water quality. The major concerns of the certified operators of water treatment plants and water supply systems are to produce and deliver to consumers water that is safe and pleasant to drink."* (Kerri. Pg.29).

Private well owners are in most cases uninformed about the areas groundwater issues. In many cases, the only time a private well has any testing at all is when real estate is sold and transferred to a new owner. It is usually a simple, one time only, coliform bacteria test and nitrate test, even though testing for the constituents in a water system are quite extensive, and bacteria tests requirements are based on the size of population served with the number of samples taken and frequency adjusted accordingly to EPA and state regulations. For public water systems the constituents that have reached un-healthy levels in groundwater from wells are reported by the water system to the public as soon

as the are contaminants are reported by the laboratory, by distributing notices such as handbills with instructions on what the contaminant is, the health effect, and what can be done to make the water safe to consume, if possible. The notices must be posted in public places, personally delivered, by mail, sound trucks with speakers, ads placed in newspapers, announcements on television and radio.

Some of the health effects can be enough to instill fear in even a person who has knowledge of water quality issues when notified through a Consumer Confidence Report in required health effects language such as these required by the California Department of Environmental Health or CDPH, Drinking Water Program regulations;

“NITRATE – Infants below the age of six months who drink water containing nitrate in excess of the Maximum Contaminant Level may quickly become seriously ill and, if untreated, may die because high nitrate levels can interfere with the capacity of the infant’s blood to carry oxygen. Symptoms include shortness of breath and blueness of skin. High nitrate levels may also affect the oxygen carrying ability of the blood of pregnant women.”(CDPH).

“LEAD – If present, elevated levels can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The water company is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using the water for cooking or for drinking. If you are concerned about lead in your water you may have your water tested. Information on lead

in drinking water, testing methods, and steps you can take to minimize your exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.” (CDPH).

“LEAD – Infants and children who drink water containing lead in excess of the action level, (15 parts per billion), may experience delays in their physical and mental development. Children may show slight deficits in attention span and learning abilities. Adults who drink this water may develop kidney problems or high blood pressure.” (CDPH).

“URANIUM – Some people who drink water containing uranium in excess of the maximum contaminant level over many years may have kidney problems or an increased risk of getting cancer.” (CDPH).

“ARSENIC – Some people who drink water containing arsenic in excess of the maximum contaminant level over many years may experience skin damage or circulatory system problems, and may have an increased risk of getting cancer.” (CDPH)

These are some of the potential contaminants that can occur from natural deposits in some groundwater that supply a well. In an article especially about nitrate level concerns, several authors have suggested that it is safe to raise the health standard for nitrate in drinking water and save money on measures associated with nitrate pollution of drinking water resources. It also states that 2-3% of western Europe and the United States could be exposed to nitrate levels in drinking water exceeding the World Health Organization standard of 50 parts per million of nitrate, particularly those living in rural areas. (Van Grinsven pg 1).

Rural health care providers or RCHPs, performed a national survey to identify perceptions of the environmental issues facing the people they represent. “In valid surveys received from 384 RCHPs, groundwater pollution and surface-water pollution ranked as the top two concerns, followed by pesticide abuse and soil erosion. Groundwater and surface water are traditionally concerns of rural communities, as those communities are almost exclusively served by well water. The respondents, who were personally interviewed by telephone, indicated that water pollution is the most important environmental issue in their rural communities, odors, visible air pollution, and noise pollution were ranked less important.”(Robson, Schneider). In another article, a local mayor was trying to alleviate concerns about the high Sodium levels in the town’s drinking water. “It is safe and fit for human consumption but we do urge caution for those who might have heart problems and recommend that they talk to their medical advisors in terms of how it might impact on their health.” (Roberts pg 1).

In some communities where water quality monitoring is gaining importance by the public, concern is voiced about government control of water supplies. In a paper about a water quality monitoring program and public fear and loathing in opposition of the program, the following was stated; “Public responses to a water quality monitoring project in south Brunswick County, a rapidly developing region of coastal North Carolina, illustrate the challenges even such a relatively benign effort can face, aside from issues of access and basic safety. This project is intended to provide baseline water quality data for a 55 square mile region that will be served by a combined wastewater and stormwater management system, the first of its kind in coastal North Carolina. Data is intended to yield a statistical description of existing water quality, help identify problem

areas that require enforcement or other remedial actions, and evaluate the effectiveness of the regional system as its programs are implemented.” (Nearhoof).

Local responses to the water quality monitoring program provide valuable lessons for others initiating monitoring projects in such areas. Problems included misperceptions about the nature and purpose of water quality monitoring, sometimes resulting in hostility; opposition to monitoring activity because it was thought to be associated with development; fear that certain water pollution sources might be identified; difficulties with regulatory and enforcement agencies; concerns about publicity for findings of poor water quality; and in some cases, determined opposition to the regional wastewater and stormwater management concept. Positive experiences included improving public support for and awareness of good water quality, direct responses to citizen concerns about specific locations and problems, development of working relationships with regulatory and enforcement authorities, and effective cleanup actions. (Nearhoof). Also stated in the paper, *“We were prepared to accept and answer concerns from some organized groups, but the initial public response to the water quality monitoring project of suspicion and fear was unexpected. During the first few public meetings many of the residents expressed a distrust of anyone associated with state and local government. The fact that the research team was from a state university was apparently enough to make many residents uneasy. Many held misconceptions as to the nature of water quality monitoring and how the data was to be used. Some residents did not want their neighborhoods to be associated with “bad water” while others refused to pay for something they did not understand the need for. Some of these fears were quenched during the first few meetings of the Water Quality Board, but others have surfaced and become acute problems for the monitoring team.”*

“Harassment of the field personnel began even before the first water sample was collected and analyzed. During a photographic and site assessment field trip along a state right of way, one employee was approached in a hostile manner by an unidentified individual. Intimidation of this sort continued with a call from a local businessman who did not want us sampling in his area. Verbal abuse has been directed at government employees in general and we were warned by a state agency of an anti-government militia group in the area. A few individuals have attempted to take water sample containers away from our field technicians on more than one occasion. Contact with local law enforcement has helped keep such matters from escalating, but the incidents have not stopped completely.” (Nearhoof pg 5).

Water quality and environmental issues are still a topic of contention when it comes to people not trusting government agencies to look out for the best interest of the public when it comes to protecting health. This is shown in Erin Brockovich’s experiences, that were chronicled in the movie “Erin Brockovich”, about her investigations in Hinkley, California over the chromium six, also known as hexavalent chromium that was found in the groundwater of local wells. Erin Brockovich has her own web site today that is open for public input and is working with people whose drinking water is being contaminated in the interest of industry. (Brockovich). *“Chromium six is found in the drinking water of 31 of 35 American cities in a survey, the highest being in Norman, Oklahoma; Honolulu, Hawaii; and Riverside California and the EPA still has not set a legal limit for this potential carcinogen although California officials have proposed a “Public Health Goal” of 0.06 parts per billion.”* (Environmental Working Group). There are currently no standards for chromium six, chromium as a constituent found in drinking water has public health goal of 100 parts per billion.

In a U.S. senate hearing the Environmental Protection Agency was admonished for allowing the American public to learn that traces of pharmaceuticals are in much of the nation's drinking water from an Associated Press, or AP, investigative series and not from the federal government. The AP's inquiry found that while water is screened for drugs by some suppliers, they usually don't tell customers medication has been found in it, including antibiotics, anti-convulsants, mood stabilizers and sex hormones. The stories also detailed the growing concerns among scientists that this pollution is already adversely affecting wildlife, and may threaten human health. (Mendoza).

Development in rural areas is moving at a fast pace until the recent economic developments in the U.S., it may be time to slow down and take a good look at what our water quality is in these rural areas. Looking at what type of problems with water quality are present and what can be done about them as growth occurs is the logical approach. As an area depending on groundwater grows water quality changes, so does an area's need for a group to observe and answer to the public on the findings of water quality studies is needed. Questions will also be asked about a need to fund such a study due to the costs of labor to take the sample in a scientific manner and the costs incurred from having the water samples tested. Depending on the type of constituent being tested for laboratory tests can be from "\$20 to \$550." (Kavousy). Many different wells would have to be included in such a study, which in turn would generate another issue of how the public well owners would pay this debt.

If a start on the subject of alleviating fears of water quality in rural areas is to be made it must start by providing the water users of an area with an education program of water issues in the local area by people educated in the area of issues that need to be

presented. Cooperation is needed between industrial, agricultural, public and private users of a rural aquifer to learn to balance needs and protect a resource as precious and necessary as the water we drink and bathe in.

Groundwater Awareness week is March 11-17 and is an excellent time to create an event to begin a process of education of the public in the need of well and septic system maintenance as well as water sampling and testing criteria. Children are also an excellent way to introduce the subject of water quality to adults. *“When a young man named Jason Harper learned that about 80 percent of the drinking water in his neighborhood was polluted with nitrates, he took action. The Grand Island, Nebraska, eighth grader decided to learn everything he could about groundwater. Now he is trying to get other kids involved in groundwater conservation too. Jason gives speeches about cleaning up the groundwater, and does a puppet show for elementary school students. He created public service announcements for a local radio station, and started a newsletter called the “Groundwater Gazette”. Jason also helps to set up a groundwater festival. Wherever Jason goes he spreads the message,”* Groundwater pollution is a problem now – it’s not in the future. *If we leave it unattended it will only get worse.”*(Get Out the Message pg. 5) The EPA has composed a program named, *“A Guide for Conducting Watershed Outreach Campaigns,”* and has a plethora of information on how to approach groups of persons with issues of organizing watershed protection outreach campaigns that is extremely useful and would also be a great way to open the topic of government trying to control peoples uses of water and give more public awareness as to why a monitoring program is needed.

Protection of our drinking water is the number one priority of the Safe Drinking Water Act and needs to include all citizens even those in the rural areas. Our republic is set up the way it is so we, as a people have the right to elect what the majority deems, knowledgeable individuals into positions of trust to guide us through tough decisions such as water quality regulations and as people gain knowledge they will be able to discuss the subject and self govern in the most efficient manner for all.

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