

BLUEWATER SHORELINE RESIDENTS' ASSOCIATION

NEWSLETTER - September, 2000

*This Newsletter is produced and distributed by the Bluewater Shoreline Residents' Association (BSRA), an umbrella group of residents/beach/cottage/subdivision associations, as a service to the shoreline residents in Hay and Stanley Wards of Bluewater. It is funded by the Member Associations and its Associate Members. For information on membership, please contact the Membership Secretary, **Jim Chapman**, at (519) 235-1644 or (519) 565-5303. The BSRA Executive is pleased to pass on the information that follows.*

Environmental Quality: a Special Report

This issue of the Newsletter is being distributed to provide current information about some aspects of Environmental Quality about which the Executive Committee believes that our membership should be informed.

Some Glimmer of Relief from Increasing Pollution

As was reported some time ago in these Newsletters, the Farming and Food Protection Act in Ontario directed that no municipal by-law was permitted to interfere with "normal farming practices" as determined in specific cases by an appointed group called the Normal Farm Practices Protection Board. This meant that it was virtually impossible to control the spread of factory farms, nor to meaningfully control their disposal of manure when and where it was deemed inappropriate. In spite of the best efforts of municipalities, wilful offenders are difficult to bring under control as evidenced in Ashfield Township, which is "up" the lake from Bluewater, and from where we, too, receive lake water pollution, especially from the heavy precipitation "cleansing" the fields and "flushing" topsoil, debris, chemicals and manure into Lake Huron early this Summer.

On June 26, Ernie Hardeman, Minister of Agriculture, Food and Rural Affairs, (OMAFRA), issued a directive to the Normal Farm Practices Protection Board that an agricultural operation proposed to be carried on in an area subject to an interim control by-law, (a method of municipal control under the Planning Act), shall not be permitted to be carried on as a normal farming practice **until** the municipality has passed a by-law that provides nutrient management planning, minimum distance separation and manure storage standards. This directive does little to establish new controls, (even ones considered to be reasonable by all sides), over the size and location of factory farms, but it does reinforce to the Board the political will to respect the importance of nutrient management plans, minimum separation distances and manure storage standards. By the way, Hay and Stanley Townships both have had such by-laws in place.

As a follow-up to the above, on July 10 Minister Hardeman announced that legislation would be introduced in the Fall to impose "strict environmental safeguards for agricultural practices." The proposed legislation would include:

- defining **categories** for types of farms including livestock operations,
- developing **standards** according to the size of farms, for agricultural practices including manure handling, storage and application, and
- providing strict **enforcement** authority, and setting out penalties and fines for infractions.

In the report by Dr. Douglas Galt MPP and Toby Barrett MPP which will form the basis for discussions, and likely for the legislation to follow, they recommend categorization of farms into 4 categories, the first three of which are defined by the number of "**Livestock Units**" (LU). For example, category 3 is defined by having greater than 450 Livestock Units, (450 cattle or 1800 hogs, for example), and it is proposed that the operator have an Intensive Agricultural Operations Certificate, suggested components of which include nutrient management plans, minimum separation distances, engineered building plans, soil investigations of the site, landscaping around the site, and possibly the use of odour treatment technology and liquid manure treatment/processing technology. This requirement should thus provide for the suspension or cancellation of the Certificate for flagrant violators such as the notorious one in Ashfield Township. Thus, if the legislation goes through as indicated, there should be some improvement in the quality of the Lake as well as of the air, and a reduction of the health hazards associated with polluted water in Lake Huron.

Research into Bacterial and Viral Pollution of Water Continues.

At the recent "Is the Coast Clear?" conference sponsored by the Lake Huron Centre for Coastal Conservation in Port Franks, a number of presentations were made, several of which emphasized that the pollution of Lake Huron is becoming a greater and greater problem, (likely coinciding with the increasing population in the drainage area), and that all segments of society contribute to the pollution, from farms, (including factory farms and individual farmsteads), to municipal and other sewage treatment plants, to individual septic tanks, and even to wildlife.

Whereas in former days, the waste from fewer people was a lesser problem that could be assimilated in nature, our vastly greater numbers of people producing vastly greater amounts of waste, (and who are mainly the reason for the existence of factory farms, for example), mean that each of us must cut back on our own small contributions to pollution in order to alleviate, (and possibly solve), the problem of pollution in Lake Huron. For example, it was stated that there are more fertilizers and pesticides sold in Ontario for lawn, park and golf grass care, etc. than are sold for agricultural purposes.

One of the interesting reports at the conference was that by Dr. Carlton Gyles of the University of Guelph who provided, among other information, some detail about the nature of *Escherichia coli* (E. Coli), the "marker" coliform bacterium used to judge the presence of noxious organisms in water, their presence indicating fecal pollution, and thus implying impure water. He noted that there are many strains of E. coli, possibly numbered in the thousands, and only some of these cause disease in humans. The most notorious one is identified as O157:H7, and it is one of the most common of the noxious strains, while being one of the most toxic, as it carries a *shiga* toxin which has a serious consequence on humans.

Interestingly, this particular strain does not appear in pigs or pig manure, but is found in cattle, beef and cattle manure, and these are the usual sources of pollution in humans, although human manure can also contain this strain

passed on by humans who may be infected by this strain but tolerant of it. Thus, we are admonished to cook all beef, (and other meats as well), thoroughly to destroy the bacteria and/or other organisms, and to practise good hygiene by washing our hands before eating or touching our faces, eyes, etc. The recent Walkerton tragedy provided examples of both direct, (from water), and indirect, (likely from humans), transmission of disease organisms.

Care must be taken in the treatment and disposal of human and animal wastes, and it is mostly liquid wastes that create problems, whether spread onto the surface of the ground or sprayed into the air so that waterborne and airborne pathogens, including *E. coli*, can contaminate well water, streams, and, eventually, Lake Huron, especially in periods of heavy runoff. To this "runoff" pollution is added the effluent from the many sewage treatment facilities in the communities within the Lake Huron watershed, including private ones at trailer parks and institutions such as the Bluewater Centre near Goderich.

The ability of bacteria and other organisms to go into a "resting" stage and to remain alive for a year, or perhaps more, especially when protected under sediments of clay, silt or sand brought down the rivers, streams and rivulets from surface erosion of farm fields and other surfaces, is the principal reason that Health Units advise that there should be no swimming in the Lake within three days after a heavy rainfall, (which may bring new pollution), or rough water, (which may release noxious organisms from the sediments.) Simple precautions such as not drinking the Lake water should be practised by all shoreline residents, as well as their families, guests and renters. At the same time, unnecessary fear should be avoided.

Using *E. coli* as an Indicator of Contamination of Water

A *backgrounder* of this title has been published by the County of Huron Health Unit, and contains such significant information that it is reproduced here with some minor editing. For further information, reference may be made to Carroll Malloy of the Health Ministry's Public Health Laboratory Branch.

When water samples are analyzed at the Public health Lab, they are analyzed for Total Coliform and *Escherichia coli* (*E.coli*). *E. coli* is an indicator of fecal contamination of water, that is, feces in the water, (also spelled *faeces* or *fæces*). Many infectious diseases are primarily transmitted through human and animal feces. Water contaminated with feces can therefore be a source of infection for human either through contact during bathing or ingestion. *Escherichia coli* (*E. coli*) is universally present in large numbers in the feces of humans, birds, and warm blooded animals. **It is readily detectable with simple, rapid, and inexpensive methods.** *E. coli* does not grow in natural water and therefore its presence is significant. *E. coli* is commonly used throughout many countries as an indicator organism for water-testing purposes — it "indicates" that there is contamination of the water by feces of either humans, birds or animals. Thus, it is also termed a "marker".

Many disease-causing organisms such as: *Salmonella*, *Shigella*, *Yersinia*, *Campylobacter*, *Giardia*, *Cryptosporidium*, *Entamoeba histolytica*, Norwalk virus, and some Hepatitis viruses are spread by feces. While *E. coli* is always present in fecally contaminated water, the other disease causing organisms are only there sporadically — when the source of the organism, (human, animal or bird), is actually infected. This will be only a very small percentage of the time. Because of the sporadic nature of the disease-causing organisms being present, and the very difficult, costly and time-consuming methods required to test for specific organisms, the testing for these organisms in most cases is not warranted.

While the vast majority of the multitudinous strains of *E. coli* do not cause any disease, an extremely small number of strains will. This possibility must be recognized, but this is not the normally intended purpose of testing for *E. coli* in water. The finding of an indicator organism such as *E. coli* indicates a **potential** for the presence of disease-causing organisms. It does not necessarily mean that any disease-causing organism is present.

Pathogenic Organisms in the Water

For a better understanding of the pathogens listed above, the information below was provided by Dr. Douglas Hutchison, a retired Medical Officer of Health.

- **Salmonella** is a family of intestinal bacteria most of which cause illness, but some do not. They cause high fevers and diarrhea by interfering with the walls of the intestines. This family also includes the typhoid types which, if they enter the bloodstream, can cause typhoid.
- **Shigella** bacteria have a powerful toxin called *shiga* toxin, which binds with cells lining the intestine, and causes their destruction. Being destroyed, they cannot perform their functions, including the absorption of liquid, and this causes dysentery. These bacteria are more difficult to treat than some others.
- **Yersinia** is a small family of organisms which has only been discovered more recently, but is not very common. They cause dysentery and enteric fevers. One of the family, *Yersinia pestis*, is a form of plague.
- **Campylobacter** is a milder form of bacterium which can cause diarrhea. As with all of the intestinal organisms, this also affects the human intestine, especially in children, the elderly and those with immunological problems, e.g., with cancer.
- **Giardia** is a single-celled parasite which is mainly found in woodland animals, especially beaver. These organisms can colonize the human intestinal tract and interfere with the normal action of the bowel, and thus cause diarrhea accompanied by a fever, colloquially known as "beaver fever" for obvious reasons. It is hard to treat because the medications for it are also toxic. Again, it is hardest on the young, the old, and those with immune-system problems.
- **Cryptosporidium** is a fungus which causes intestinal infection, and is also difficult to treat, especially in the young, the elderly and the immunodeficient.
- ***Entamoeba histolytica*** is the genus and species name of a specific amoeba, (a single-celled animal also spelled amoeba or ameba), is not common. It works on concentrating in large numbers in the intestines and interfering with the intestinal lining and thus interfering with the normal intestinal functions.
- The **Norwalk virus** is very rare but can be found in water, although it is normally transmitted through human contamination from person to person. Like the others, it causes gastro-intestinal problems.
- **Hepatitis A** is the intestinal variant of hepatitis carried by humans, often by food handlers. Outbreaks from transmission by water are not at all common.

Please note from the above that there are several different life forms which can be found in water, and testing for the total coliforms and for *E. coli* only indicates that these other pathogens **may be** present, but that some are likely present. Dr. Hutchison advises that nowadays all surface water is suspect, and should probably be treated anyway before using it in its raw form for drinking, etc. It should be noted that Lake Huron's water is all surface water slightly diluted by rain. He also notes that wells, including drilled wells, have a potential for contamination, and well water

should be regularly tested, and probably regularly treated. Nonetheless, he warns against unnecessary and inappropriate fear of water contamination, and advises that we should maintain a **healthy enlightened self-interest** in our water supplies and recreational waters.

Have you avoided septic tank problems and polluted runoff by having your septic tank pumped lately? Call the Health Unit at 482-3416 if you need further advice on the intervals between pumping or on other septic tank issues.

Don Brazier, President

Compiled by Doug Banks, Newsletter Editor