Ireland's Poisoned, Dirty water: the cover-up

If the carcinogens in the chlorine don't get you, the parasites that chlorine doesn't even kill still will

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By Tony Lowes

On 14 November 2002, Ireland was condemned by the European Court of Justice for a pattern of repeated breaches of microbiological parameters in hundreds of public and private water supplies affecting more than half the nation's population. The contaminant was *E.coli*, in itself the cause of serious food poisoning in humans – but also an indicator of other even more serious faecal contamination.

Overgrazing and rampant development were quickly identified as the underlying causes.

Ireland's slow response to the 2002 Judgment was criticised by the Commission, which returned to Court in 2007. It cited widespread continuing breaches of the standards. By 2009, even Environmental Protection Agency (EPA Reports) were showing that 51% of our waste-water treatment plants were malfunctioning. The difficulties were technical problems, under-capacity and shoddy design.

So Ireland's secret weapon in the war on E.Coli was rolled out: a frontal attack on the bacteria with a national campaign of drinking water chlorination.

The strategy was clearly designed dramatically to reduce the shocking levels of microbiological contamination at minimum cost. But it attacked the symptoms of the problem rather than the cause which was the absence of effective water-source protection and land-use mismanagement.

This strategy ignored clear warnings from the EU that the use of chlorine in Ireland's peaty water would not be safe.

While chlorine is an excellent disinfectant, it is also a very reactive chemical and it is known to create a dangerous cocktail of carcinogenic by-products called trihalomethanes [THMs] – which are Disinfection By-Products [DBPs] - when used to disinfect peaty water. Ireland's water is one of the most peaty and discoloured in the Western Hemisphere, so it wasn't very long before THMs started showing up in our drinking water.

THM-test failure rates grew dramatically throughout the country. THMs now exceed the EU and WHO standards in drinking water supplied to almost 600,000 people.

And chlorine doesn't kill "all known germs". Chlorine has zero effect on cryptosporidium, the intestinal parasite that brought about the 2007 Galway water crisis. Cryptospdiosis has become, in the last 3 years, 400% more prevalent in Ireland than the European average, according to the European Centre on Disease Prevention and Control.

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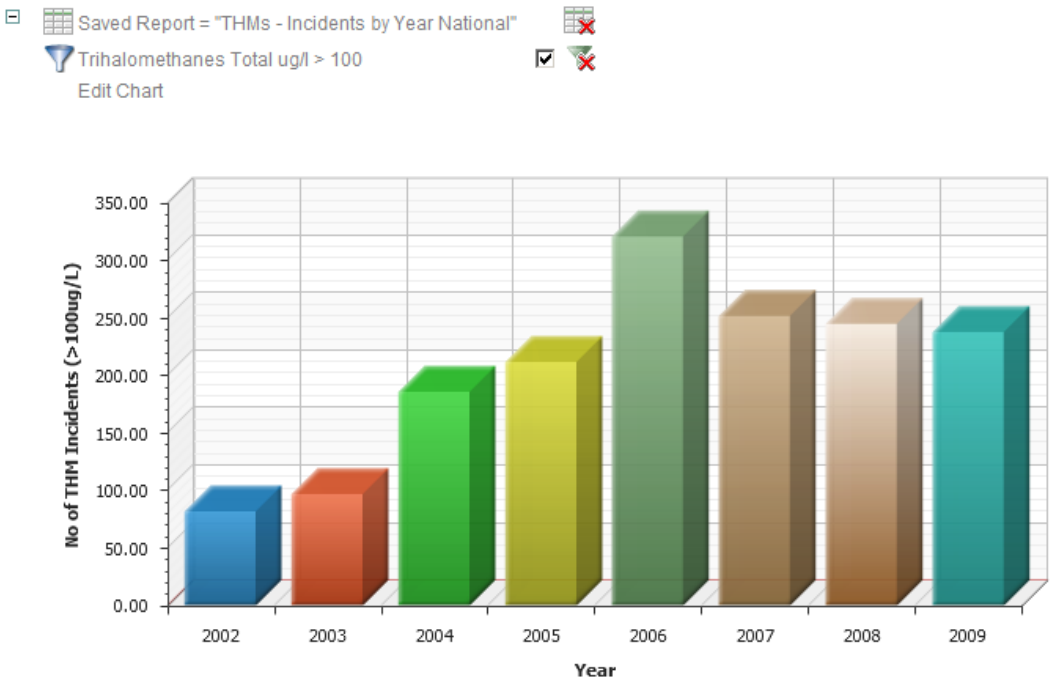
The carcinogenic elements: THMs

THMs are harmful to human health and include known carcinogens like chloroform.

They are ingested by drinking, but can be inhaled in the bath or shower, or when washing clothes and dishes. The EU directive of 1998 sets the safe level of THMs at 100 ug/l (from 2008 onwards), matching the WHO standard. The environmental authorities of the US set the legal safe level at 80ug/l, with a voluntary agreement of 10ug/l for bottled water.

In Ireland, despite the EPA's headline claims of "99.2% compliance with chemical standards", the 2011 small print in the survey ['The Quality of Drinking Water in Ireland' tells a different story:

- 16% of our public water supplies exceed the legal THM limits.
- 598,951 consumers are supplied with drinking water over this limit.
- Twenty-four counties have supplies breaching the limit.
- 14 counties have supplies with double the THM limit.
- One water supply, Ring, Co Waterford, had THM levels nine times the WHO / EU limit.
- No public notification of these failures has ever taken place.
- The Irish Health and Safety Authority do not consider the results "pose a potential danger to public heath in the *short* term". (It takes time to get cancer).



THM test exceedences remain high, in spite of a 40% drop in testing.

Responding to reports of high THM levels in Wicklow water, its County Council's Director of Services posted a notice on its website stating "to date, both the International Agency for Research on Cancer (IARC) and WHO have concluded there is not enough evidence to prove that THMs pose a health risk".

This "semi-official" position statement is a disingenuous and dangerous misquotation from the World Health Organisation (of which IARC is a part).

A small sample of what the world's authorities say about the potential health effects of THMs reveals a very different view:

- The Health Protection Agency, UK, declared in 2007: "WHO IARC-classified chloroform (a THM) is a category 2B carcinogen i.e. possibly carcinogenic to humans". "The results have raised concern that chlorination by-products in drinking-water may increase the risk of certain cancers" [K Foxall, HPA 2007 and IARC 1987].
- The US EPA states: "epidemiologic studies suggest an association between cancer of the large intestine, rectum, and/or bladder and the constituents of chlorinated drinking water, including chloroform".
- Chloroform is a central-nervous-system depressant and carcinogen. Exposure of pregnant animals to chloroform increases the rate of fetal loss and malformation [US Dept of Labour, Patnaik 1992].
- The medical officer of Nova Scotia in Canada recently recommend that pregnant women be aware of the THM levels in their water, and "take steps to reduce their intake".

Instead of focusing on the contamination, Ireland instituted a perverse attempt to hide the issue.

The 2007 Statutory Instrument that governs water supplies says that if a water supply is placed on the 'Remedial Action List', the public must be notified. 46 such supplies, serving 234,051 consumers, were placed on the Remedial Action list for THMs in 2009. Three supplies were even supposed to be abandoned. But, to date, *not one single consumer* has been notified.

The EPA makes the sanctimonious claim that 'Consumers expect their drinking water to comply with standards and should be informed by their water supplier when this expectation is not met. Local authorities should post notifications to the EPA and up-to-date monitoring results of their water supplies on their websites'' .

The reality is quite different. As of today, 14 Local Authorities have no information whatsoever about the quality of drinking water on their websites, only four provide results of drinking-water-testing programmes, and none of these provides real-time water-test results.

So, why is there a reluctance to address the THM contamination problem?

It seems to stem from the sensitive forces that actually cause the organic matter in the water. These are the powerful lobbies in the water-catchment areas behind unplanned development, overgrazing, drainage for conifer-plantation forestry, unlicensed peat extraction, and agriculture which depends on fertiliser, chemicals and excrement.

At the time, and in the face of these interests, chlorine seemed like an easy "whitewash". It was not.

Cryptosporidium: the time bomb

Cryptosporium is an intestinal parasite that causes cryptosporidiosis. Cryptosporidium was identified in Ireland as a serious public health risk following an outbreak in Galway in 2007, when hundreds of local people and tourists were infected and 90,000 people were forced to boil or buy water.

Symptoms included upset stomach, diarrhoea, cramps, weight loss, dehydration, and sometimes fever. The effects of cryptosporidiosis can be fatal for immunocompromised individuals, the very young and the very old, including AIDS and cancer patients. There is no treatment for the illness. Once an infection has established itself, it spreads rapidly within a community, especially between small children.

The cost to the authorities was not only in providing alternative water, but in a massive advertising campaign to convince the world that Galway was still a safe place to visit.

Chlorine has no impact on the spores and water treatment currently relies mainly on ultra violet [UV] light. But if the water source contains high levels of organic matter – 'colour' or 'turbidity' - even UV can be ineffective. And turbidity is recognized by the EPA as a major problem in Irish water supplies.

Most Irish water supplies rely on surface water rather than ground water. The state of many surface water catchments is very poor; many are overgrazed and degraded by unmanaged drainage, unlicensed turf extraction, burning and forestry. Damage to ground covering vegetation increases the level of run-off of organic carbon into the water and provides ideal conditions for the transmission of bacteria and parasites in the catchment waters. This parasite is particularly

tough and opportunistic and tends to take advantage of poor weather to move around in its spore form in flood waters. It can survive for many months, even in deep boreholes; even ground water gives no guarantee against cryptosporidium.

Add to this the limited use of Ultra violet disinfection in Ireland (only 3% of all water supplies) and the fact that chlorine has no effect on this parasite and this all adds up to a serious risk. Yet testing – or the reporting of it to the supervisory body, the EPA, was stopped in 2008, after which we no longer have any national data.

One of the authors of an ongoing research project on Lough Gill and the Liffey, due for completion next year, recently told the Irish Independent that the findings so far are "worrying", warning that anyone who feels ill following water sports on our lakes and rivers should contact a doctor. In tests that were analysed at IT Sligo, UCD and the Johns Hopkins University in Baltimore, U.S.A., cryptosporidium was found "in almost every sample".

In a previous study on Lough Arrow, the same authors found two sewage treatment plants so ineffective that they were, in effect, behaving like "factories" for the distribution of cryptosporidium spores. These spores were then sucked up by the adjacent drinking water intake systems and delivered to local residents. The study concluded that 'The current utilisation of Lough Arrow for drinking water and recreational uses poses definite public health risks.'

Lough Arrow, situated in Sligo and Roscommon. is only one example.

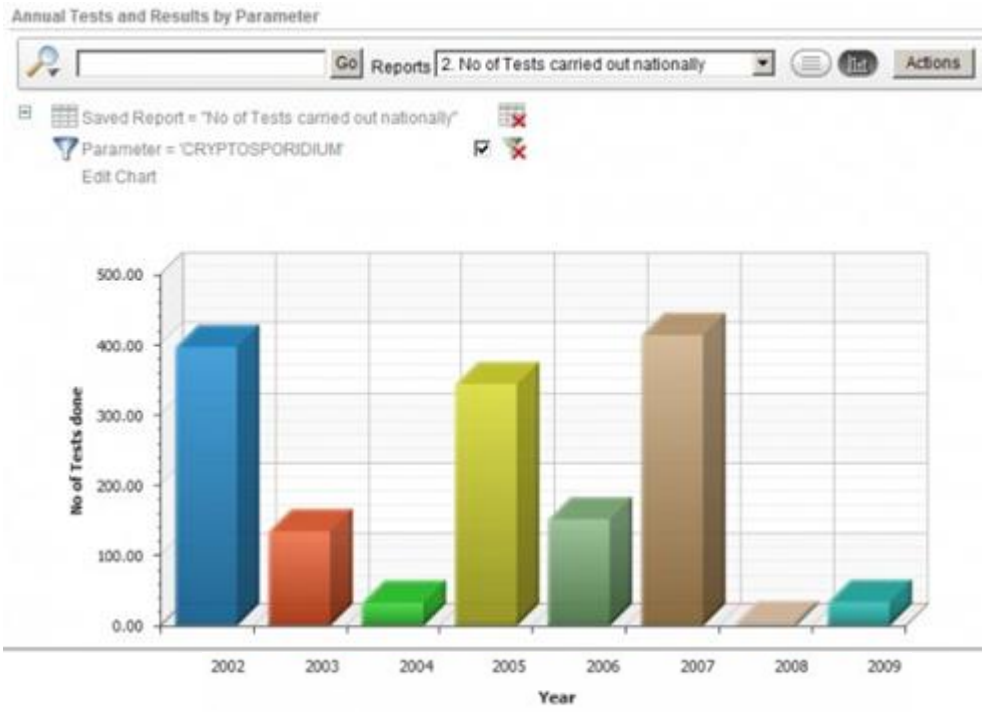
Back in the late 80's, the UK witnessed a widespread cryptosporidium outbreak which brought about the Braednacht Report recommending that 'Codes of agricultural good practice to be promoted and reviewed regularly'.

In Ireland, such a review in 2004 produced an agreement between the Government and the IFA which reduced the buffer zones around protected water bodies from 15 metres to 1.5 metres, allowing farm animals to deposit waste, including their parasites, directly into drinking water sources. If that doesn't happen, slurry spreading can also deliver the parasites directly to the water bodies

Why if cryptosporidium is so widespread in the agricultural and aquatic environment does the EPA no longer require that Local Authorities report cryptosporidium monitoring? Why does the 2011 'Water Supply Handbook' in discussing cryptosporidium where water treatment plants have no barriers or UV for cryptosporidium state that there 'is no point in monitoring simply to confirm that clear risk.'

It is hard to see how the EPA can meet the terms of the EU Directive to provide water that is 'wholesome and clean' and 'free from any micro organisms and parasites' without Cryptosporidium test results.

Based on a survey of all LA published test results carried out for this article, there are now only three Local Authorities in Ireland that carry out any testing results for cryptosporidium at all and in total, no more than a handful of test results are publicly available over the past 4 years.



Caption: EPA reporting of cryptosporidium tests has fallen dramatically since the 2007 Galway outbreak

Across the waters, the word 'liability' arises. A most deadly outbreak of cryptosporidium in Milwaukee in 1993 included 400,000 illnesses and 100 fatalities. Litigation was settled through a class action. Subsequent to an independent report which found that there were significant deficits in Welsh Water's activities leading to a 2005 Cryptosporidium outbreak with 231 illnesses, cases surrounding the outbreak were settled on a confidential basis by Welsh Water.

When the public anger against Galway cryptosporidium outbreak was at its highest, *The Irish Medical News* ran an analysis of the legal responsibility of 'Galway County Council, Galway City Council, the Minister for the Environment, and others'. The only factor that has changed since Raymond Bradley's warning is the EPA's ability to hide the dangers – increasing their liability – and the risks to consumers:

> 'If their agents or their employees should have been aware of such a risk and failed to address this risk, and if the consequences of failure to do so was the transmission of Cryptosporidium, then legal liability will arise. Details of measurements at each water treatment plant need to be made available for public consideration. This information can only be obtained by an independent investigation or through the litigation process.
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> The "Blame Game" between the politicians must culminate with responsibility being imposed upon the relevant Irish Authorities for this health and economic disaster. Otherwise, no lessons will be learned to enable the prevention of a similar catastrophe elsewhere in Ireland in the future.'

Tony Lowes and Malcolm Coxall