

Briefing paper on metaldehyde

Summary

The water industry, along with farmers and producers, has demonstrated a successful voluntary approach to reducing the concentrations of metaldehyde in rivers, reservoirs and drinking water over the past few years. However, 2012 was an exceptional year, with the combination of a dry start followed by a very wet summer and autumn. This increased both the presence of slugs and snails and also the tendency for rapid run-off of water from treated land.

The resulting increases in metaldehyde in drinking water resulted in breaches of UK and EU standards. To ensure that the reductions seen in previous years are sustainable, water companies are assessing where high-risk areas or hotspots exist and, working with stakeholders, considering a range of extra options in these areas to reduce the risk from metaldehyde.

1) What is metaldehyde?

Metaldehyde is a selective pesticide used by farmers and gardeners to control slugs and snails in a wide variety of crops. It is sold under a variety of brand names in pellet form.

2) Why is metaldehyde an issue for water companies?

Pellets applied to crops on land can find their way into drains and watercourses either directly during application or as a result of run-off during high or prolonged rainfall events. Current drinking water treatment methods designed to remove a range of pesticides are not effective at completely removing metaldehyde from water. There have been occasions when trace concentrations of metaldehyde have been detected in treated drinking water. These concentrations are extremely low – the highest being around 1ug/l (micrograms per litre) and mostly much lower. However, the concentrations are above the European and UK standards for pesticides in drinking water set at 0.1ug/l.

3) Is there any risk to health?

No. Although the concentrations being detected are occasionally above the standard for drinking water, the standard for individual pesticides is not set on a health basis. Water companies are focused on maintaining the very high quality of drinking water in the UK – some of the best in the

world – to ensure that water is safe to drink and to meet the national and European standards.

The Health Protection Agency (now part of Public Health England) has confirmed that there is no risk to health from the concentrations that have been detected in drinking water supplies. Using toxicological studies it is possible to determine an “acceptable daily intake”. This indicates that to be exposed to this concentration the average size person would have to drink more than 1,000 litres of water each and every day of their life.

4) Why can't metaldehyde be removed from drinking water?

The treatability of pesticides is dependent upon their physical and chemical properties. The characteristics of metaldehyde mean that it is not effectively removed by adsorption onto activated carbon – the normal treatment for removing any pesticides that may be present in raw water. Its relatively simple chemical structure means it cannot be broken down into more benign component parts by other water treatment processes using chlorine or ozone. It is therefore a very difficult compound to completely remove; even using existing advanced water treatment processes.

The most sustainable solution is to control the pesticide at source to prevent metaldehyde getting into watercourses and rivers in the first instance. This is best achieved by changing the way metaldehyde is used in the catchment.

5) What is the water industry doing about it?

Water companies have legal programmes of work (Undertakings) agreed with the Drinking Water Inspectorate to reduce the risk of breaching standards set as part of drinking water quality regulations. These programmes of work predominantly involve catchment management, aiming to reduce concentrations of pesticides at source. The measures that water companies have introduced include:

- Management of abstraction, where possible, to minimise use of water containing the highest concentrations of metaldehyde
- Supported the use of alternative products in particularly sensitive catchments or high-risk areas
- Considered all potential water treatment options.

Hotspots

Water companies have actively engaged in the identification of hotspots – the highest risk areas of catchments where the use of metaldehyde and

other pesticides has the highest likelihood of causing issues for water treatment.

Assessments carried out by water companies on more than 2,300 raw water abstraction points in England and Wales identified 110 at risk of contamination from metaldehyde. Water companies will continue to monitor raw and treated waters for metaldehyde and are looking for significant reductions in the concentrations found in raw waters.

It is in these hotspot areas where a voluntary change to alternative products, such as ferric phosphate, to replace metaldehyde should be trialled to determine whether product substitution would be cost beneficial and doesn't result in pollution swapping.

Research into treatment

The industry is funding research being carried out by UKWIR into treatment methods and is now pilot testing potential solutions. However, indications are that they would be prohibitively expensive and energy consuming to implement on a large scale.

Joint working

In addition, the water industry has supported catchment initiatives through the Environment Agency, Natural England and the Voluntary Initiative. Water companies have been working closely with the producers and distributors of metaldehyde to provide a major national programme of advice and training to farmers and their suppliers. The aim is to raise awareness of this problem and promote best practice for timing and methods of application.

The water industry also supports the work of the Metaldehyde Stewardship Group (MSG) and its nationwide plan of communication to farmers, agronomists and the supply chain. The MSG and water companies continue to work closely together to share information and facilitate the effectiveness of control measures. Water companies are also working with environmental organisations and the farming community to identify and target areas where metaldehyde is high in the catchment.

6) Progress

Early successes

Through the MSG the water industry has been in discussion with the pesticide industry and farmers about metaldehyde in water for more than five years. Between 2008 and 2012 there was a downward trend in the

number of occasions on which metaldehyde was detected in both raw and treated waters. The range of measures taken resulted in an overall reduction of metaldehyde concentrations in catchments used for drinking water supplies, although seasonal spikes were still recorded.

Climatic factors are known to influence the use of metaldehyde in catchments. The dry autumns, cold winters and dry springs that have typified conditions in the recent past have not been optimal for slug activity, and therefore the need for chemical control has been minimal.

Challenging year

However, 2012 was different and saw significant concentrations of metaldehyde in rivers and reservoirs, following unprecedented slug pressure due to the warm wet summer months. The wet, mild summer and autumn resulted in a significant increase in slug activity to levels which challenged crop establishment and yields. In addition, the very wet weather posed difficulties to farmers attempting to employ non-pesticide based practices as well as promoting run-off. As a consequence, significant concentrations of metaldehyde were seen in rivers and reservoirs during autumn 2012.

Peaks of metaldehyde were in some cases higher than they were in 2007/8 when intensive national monitoring began. Some water companies were able to control concentrations by limiting the amount of water abstracted from rivers into storage reservoirs. For others this was considered as an option, but found not to be feasible or sustainable, particularly where a number of affected drinking water sources are directly abstracted into the water treatment works.

7) What if the situation persists?

The measures taken to date have shown benefits but may not be sufficient to sustainably meet drinking water standards. Given that climatic variation is likely to become more extreme, the water industry needs to be certain that measures taken to protect drinking water sources are robust.

As part of their regulatory requirements water companies carry out risk assessments on each of their drinking water source catchments. Based on the evidence generated by these risk assessments, appropriate barriers are developed to protect the public water supply – from catchment solutions to treatment options. Water companies revisit these risk assessments regularly to ensure that they are current and reflective of the most recent

information and develop their investment strategies based on reducing these risks.

The water industry remains committed to working with the MSG, regulators and agricultural stakeholders to ensure that metaldehyde does not find its way into rivers and reservoirs, and fully supports the voluntary measures and catchment management approaches being undertaken. As part of this voluntary approach action is needed by manufacturers, users and regulators of metaldehyde to ensure a significant reduction in the levels of this pesticide in water.

If this voluntary approach does not generate sustainable reductions in concentrations of metaldehyde in drinking water sources then it may be necessary for the introduction of tighter environmental restrictions, such as the enforcement of Water Protection Zones, which would provide the Environment Agency with additional powers to protect water at a local level – including the prohibition of harmful activities.

8) Further information sources

For more information please see the following hyperlinks:

- [Environment Agency position on metaldehyde](#)
- [DWI position on pesticides](#)
- [Metaldehyde Stewardship Group](#)
- [Water UK](#)

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