

SEWER BAITING FOR RATS IN THE UNITED KINGDOM – IS IT MONEY DOWN THE DRAIN?

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Abstract In November 2000, Water UK (a representative organisation which brings together all the water and waste water utilities) and the Local Government Association (A national voice for local government in the UK), published the National Sewer Baiting Protocol which listed a number of principles that Water and Sewerage Companies (WASC) and local authorities (LAs) were expected to follow when undertaking sewer baiting programmes. The protocol was intended to provide LAs and WASC with a basis for closer working relationships, with the aim of streamlining spending whilst tackling the issue of rats in sewer networks; preventing ineffective spending and inefficient treatments. The National Pest Advisory Panel (NPAP) (a panel of experts offering advice and guidance to the Chartered Institute of Environmental Health (CIEH)) strongly support the suggestion that Control of rats in sewers and drains is an essential part of any rat treatment on the surface. NPAP sent a detailed survey to all LAs in England, Wales and Northern Ireland in 2002 (n=406) and again in 2012 (n=368), exploring their approaches to sewer baiting pest management in order to monitor the LAs and WASC sewer baiting activities to assess how these may have changed over time, and highlighting if baiting activities are effective and efficient.

Key words Commensal rodents, National Sewer Baiting Protocol, public health.

INTRODUCTION

The control of rats in urban environments involves more than just dealing with above ground rodent populations. Sewers provide a protective and stable environment for rats with an underground habitat free from predators where they have the freedom to live and breed (Brooks 1962). The brown rat, *Rattus norvegicus*, or sewer rat is thought to prefer living underground but when above ground will look to inhabit areas that provide protection and shelter (Brooks, 1962 and Illinois Department of public health)

Sewers are historically considered to be the main reservoir for rats (Brooks 1962, CIEH, 2003) with signs of rats above ground being an indication of possible increased population numbers below ground. Research carried out by Battersby et al. (2002) and Bonnefoy et al. (2008) reports that over half of surface rodent infestations in the urban environment are connected to defects in sewers. Staff within the local authorities (LAs) and Water and Sewerage Companies (WASC) have a detailed knowledge and understanding of rodent behaviour and the impact sewer rat populations have on society and public health (Battersby, 2004). Sewer rats are cunning and will use defects in a sewer as a way of finding an escape into the above ground environment putting public health at greater risk. Controlling rat populations and maintaining a high standard of maintenance of the sewerage

networks can greatly reduce this risk to public health. (Musa and Cheong, 2004, International Pest Control, 2013)

Successful sewer baiting activity relies on effective integrated pest management and monitoring of the environment. Proactive monitoring, maintenance of the sewer systems and baiting could minimise the public's need for rat treatment requests (CIEH/NPAP, 2013). In the past, LAs utilised proactive baiting to control the rat populations living below ground in sewers. The objective of the 2000 National Sewer Baiting Protocol was to facilitate improved co-operation and communication between LAs and WASC. Seven key points were made covering areas of information sharing regarding new baiting activities; facilitating success of rodent controls in sewers and jointly reviewing the LAs and WASC operations and sharing information regarding costs. Reports to CIEH/NPAP from numerous LAs pest liaison groups (voluntary groups whose members comprise of pest control department operatives, supervisors and managers from local authorities across the UK) noted that the implementation of the 2000 protocol appeared to be patchy and in some areas, was alleged to have been ignored completely. This feedback strongly advocated the need for refinements to the protocol and for the introduction of an operational guidance document on sewer baiting treatments which should include training and qualifications of pest control technicians; health and safety aspects; treatment methodology. This document is available at www.urbanpestsbook.com (CIEH/NPAP, 2013; Murphy and Oldbury, 2002).

METHODS

The National Pest Advisory Panel, established in 2001 sent out a comprehensive survey to all local authorities in UK in 2002 (n=406), with a response rate of 64% (n=263). The survey explored LAs and WASC sewer baiting activities in relation to the 2000 protocol, in order to provide a baseline of sewer baiting services provided. This survey was repeated in 2012 (n=368) with a response rate of 41% (n=151), in order to gauge a 10 year picture of the LAs and WASC communications and workings in relation to the 2000 protocol, the change to legislation in October 2011 now making WASCs responsible for lateral drains and private sewers, and how austerity measures of 2010 with an impact of 28% cuts in public funding within local authorities, may have impacted on the provision of sewer baiting and rodent control measures by LAs and WASCs.

RESULTS AND DISCUSSION

In 1989 the 10 publicly owned water and sewerage authorities in the UK were privatised and became Water and Sewerage Companies (WASC), now individually and independently managed. Following privatisation the responsibility for undertaking treatments to control rat in sewers and funding of sewer baiting activities became unclear. However, the 2000 National Sewer Baiting Protocol states, where possible sewer baiting and baiting to combat rat infestation should be undertaken in a complementary manner by agreement between the Water UK member and the local authority (OFWAT). The recent austerity measures and financial pressures placed on LAs, and the expectations of joint financing for sewer baiting activities may be adding unnecessary pressure to LAs in achieving their legal responsibility of rodents control in their districts. (PDPA, 1949)

Respondents provided figures with regards to their LAs and WASC spent on sewer baiting per annum. Table 1 details the average spent for 2002 and 2012 by each contributing party. Between 2002 and 2012 there has been a £2,566 reduction in spending for sewer baiting on behalf of the LAs per annum with an increase of £3,796 spent on sewer baiting from the WASC per annum.

Table 1. Average spent on sewer baiting by local authorities and Water and Sewerage Companies in 2002, 2012.

	2002	2012	Difference spend between the years:
LAs average Spent per annum	£10,295	£7,729	- £2,566
WASC average Spent per annum	£7,447	£11,243	+ £3,796

Proactively baiting in sewers helps to actively monitor and control sewer rat populations, preventing them from becoming an above ground problem using integrated pest management (Murphy and Oldbury, 2002). Many debates have surrounded the effectiveness of proactive baiting in sewers compared with reactive baiting in sewers. It is believed WASCs opt for reactive baiting of sewers in the belief that it is more cost-effective (CIEH, 2003), Murphy and Oldbury (2002) state, reactive sewer baiting did little to actually manage rat populations or solve localised problems. The CIEH believes that proactive sewer baiting is the most cost-effective method for the control of rats in sewers, and in the past local authorities have utilised proactive baiting activities to control these sewer rat populations. Since privatisation, the WASC are believed to have taken sewer baiting back under their control in many geographical locations, and with this, are thought to have an increasing tendency for only reactive baiting to be carried out by the LAs (CIEH/NPAP, 2013). When asked which baiting technique best describes the one used by their LA; the data highlighted a 4% drop in the number of LAs in 2012 (21.5%) who carry out proactive sewer baiting techniques compared with 2002 (25.5%). The results showed there had been an increase of 3% in the number of LAs who stated they provide only reactive baiting treatments in 2012 (42%), compared with that of the 2002 (39%) data. Some authorities provided both reactive and proactive baiting of the sewers, between the 2002 (25.5%) and 2012 (36.5%) there had been a 1% increase in the number of respondents who now conduct their sewer baiting service this way (the percentage split between proactive and reactive for this option was not questioned.).

Table 2. Is your liaison with the Water and Sewerage Companies on sewer baiting?

	2002	2012	Percentage differences
Regular: (Planned or when necessary)	35%	45%	+10%
Irregular: (Irregular or never)	65%	55%	-10%

The 2000 Water UK protocol was designed with the aim that communication and co-ordination between LAs and WASC would become more streamlined. Table 2 identifies the LAs respondent's liaison activities with their WASC. One of the protocol points states, Water UK members and local authorities should jointly review on a regular basis their operation of this protocol with a view to improvement. In 2002 65% of LAs respondents reported they met on an irregular basis with some advising never liaising with their WASC, this fell by 10% in 2012 (55%). Between 2002 (35%) and 2012 (45%), Regular planned meetings had seen a 10% increase in the number of LA respondents

who liaise with their WASCs whether it be on a planned or when necessary basis. OFWAT (The water service regulation authority in the UK) recommend regular operational meetings in order to maintain treatment efficiencies.

LAs have a responsibility to ensure the control of rat activity in their district (PDPA, 1949). Correlating rat activity at the manhole means LAs can communicate information back to the WASC and map hotspot areas for rodent activity above ground in order to gain control. The survey asked respondents if they record the infestations found at the manhole. Sixty eight percent of the LAs respondents in 2002 advised they do not record this data with this seeing a significant fall of 7% in 2012 (61%) ($P=0.003$), resulting in more LAs now recording this data. Keeping a record of infestations found at the manhole helps build a local knowledge of rat population hotspots. Highlighting rat population hotspots at a manhole helps to build the knowledge of heavily infested areas, defects in sewers and aid effective management and control of rat populations above ground linked to sewerage networks below ground.

CONCLUSION

The history of sewer baiting has been one of good intention with the launch of the 2000 National Sewer Baiting Protocol. However, the information within the protocol seems to be limited when it looks at how its expectations are to be achieved by the intended parties. There is no specific funding programme in place for WASC, with individual WASC choosing what actions they will take in order to control rats in sewers, with limited knowledge this emphasises the need for LAs input to sewer baiting activities. The research highlights the lack of joint working, co-operation and communication between LAs and WASC which could greatly contribute to increased sewer rat populations reaching the surface as a result of reactive rather than proactive monitoring. The revised National Sewer Baiting Protocol, Best Practice and Guidance Document by NPAP 2013 published by Chartered Institute of Environmental Health, highlights the importance of adopting best practice, sound strategies and sewer baiting techniques in order to achieve effective rat control in the sewers. The only way to successfully control rat populations in sewers is the provision of effective maintenance of the sewerage network infrastructure together with proactive sewer baiting programmes. As with other initiatives, this will require adequate funding and communication between those responsible for the sewers and those with geographical knowledge and public health protection responsibilities. Controlling rat populations in the sewer networks across the UK will ultimately reduce the need for second generation anticoagulant rodenticides (SGAR) used to control some above ground rodent populations. Identifying defects in the sewer networks will have a profound impact in reducing the number of sewer rat populations reaching the surface. This in turn will reduce the need to use SGARs and the risk of secondary poisoning to non-target species; something which is constantly monitored by European Union.

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