



Aim

The project aim was to recommend a list of marine tracers with associated conditions for exemption under Article 17 of The Marine Licensing (Exempted Activities) Order 2011 (as amended). It also sought to develop a process by which new marine tracers could be identified for inclusion in the approved list.

Introduction

Materials and substances can be released into the marine environment to allow scientists and engineers to directly track the movement of water and water-transported media.

Collectively, these materials are known as tracers and can vary from inert particles and soluble fluorescent dyes to radioactive or biocidal substances and microbial cells.

Tracers are used in a wide range of marine activities including construction, engineering, dredging, flood and coastal defence, leak detection and water quality studies.

Under The Marine Licensing (Exempted Activities) Order 2011 the deposit of any tracer is exempt from marine licensing provided a number of conditions are fulfilled:

1. Notice of the intention to carry out the activity must be given to the MMO before the activity is carried out.
2. The tracer must have its use approved for the purposes of the Order by the licensing authority.
3. The tracer must be used in accordance with any conditions to which the approval is subject.

Tracers may have a variety of potential impacts. Robust consideration of these impacts was required to facilitate a proportionate, streamlined approach to marine licensing and ensure that use of approved tracers under the exemption will not pose a significant risk to environmental and commercial interests.

Methodology

An initial list of 70 marine tracers was identified based on a review of existing tracer use licences, previous reports and wider literature searches. Of these, 24 tracers were prioritised for detailed review based on common usage and likelihood of suitability for exemption. These included microbial, chemical and natural particle tracers. The approach to producing a final recommended list of exempt tracers and associated conditions was informed by a review of existing legislative chemical use and discharge frameworks.

The prioritised tracers were subject to a detailed risk assessment considering the full range of potential risks posed by the different types of tracer:

- Environment risks
- Social risks (including human health)
- Economic interests

The risks were evaluated through assessment of tracer characteristics such as toxicity, persistence in the marine environment, potential to cause disease, etc. Agreed threshold values for these characteristics which, if exceeded, might result in unacceptable risk were defined based on existing legislation.

Tracers which exceeded these thresholds were not considered suitable for exemption. Where insufficient evidence was available to inform this decision for a tracer, it was also considered unsuitable for exemption.

The outcomes of this risk assessment also informed the development of tracer specific conditions to mitigate potential risks for tracers considered suitable for exemption.



Results and conclusions

The evidence report provides detailed description of the approach taken during development of the exempt tracers list and associated conditions. The project also produced supporting desk notes for use by MMO case officers.

Of those assessed, a total of 15 tracers were considered suitable for inclusion on the final list of approved tracers if users complied with specific conditions:

- Erioglaucine
- Sulforhodamine G
- Uvitex WGS
- Fluorescein
- Xanthene
- Diphenyl methane
- Rhodamine WT
- Phi-X174 coliphage
- MS2 coliphage
- PRD1 phage
- Bacteriophage for *Enterobacter cloacae*
- Bacteriophage for *Serratia marcescens*
- Fluorescent coated natural particles
- Fruit (e.g. Oranges and Apples) and seeds
- Fluorescent (painted) pebbles

Synthetic particle and radioactive tracers were considered unsuitable for exemption due to uncertainty surrounding risks of use.

Conditions for use were proposed to ensure the use of tracers under the exemption will not pose a significant risk to environmental, social and economic aspects of the marine environment. These were:

- Quantities and application rate of chemical tracers were restricted based on likely concentration at which effects might be observed.
- Concentration and total application volume of microbial tracers were limited.

- Total quantities, particle size and application area of particle tracers were restricted.
- Additional criteria and recommendations for best-practice approaches were also proposed; for example criteria to ensure protection of shellfisheries and bathing waters.

Full details of proposed tracers and associated criteria are available in the project evidence report.

MMO comments

MMO is grateful to colleagues in Natural England and the Environment Agency for input provided throughout this work.

The recommendations for exempt tracers and associated conditions provide in this work will inform the list of approved tracers for marine waters under the remit of MMO marine licensing. The outputs will also facilitate addition of new tracers to the list going forwards and review of conditions as new evidence becomes available.

Further information

Please direct any correspondence regarding this evidence report to the Evidence Team by emailing evidence@marinemanagement.org.uk

Further information on exemptions is available through the MMO licensing webpages.