



# **MINERAL AND VEGETABLE OIL POLLUTION – GUIDANCE FOR SHORELINE RESPONSE**

## **Scientific, Technical and Operational Advice Note - STOp 1/18**

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*Note: This document should be read in conjunction with:*

- [Emergency Response and Recovery guidance](#) - Non statutory guidance accompanying the Civil Contingencies Act 2004
- [STOp 2/16 - The Environment Group and Maritime pollution response in the UK](#)
- [The National Contingency Plan \(NCP\) - A strategic overview for responses to marine pollution from shipping and offshore installations](#)

All extant Maritime and Coastguard Agency (MCA) STOp notices may be found on the MCA web site: <https://www.gov.uk/government/publications/scientific-technical-and-operational-advice-notes-stop-notes>

Further information is also available in the MCA's Oil pollution, contingency planning and response training materials at <https://www.gov.uk/government/publications/oil-pollution-contingency-planning-and-response-training-materials>

## 1. Introduction

In recent years there has been an increase in reports of pollution described as white or yellow lumpy/crumbly material on the shoreline with a waxy consistency, ranging in size from football (sometimes larger) down to pea sized.

Given the increased frequency of reported incidents of these substances on UK beaches and a number of recent pollution incidents involving large quantities of such substances, this STOP note aims to capture some of the lessons identified.

These incidents have been reported on other European shorelines, and the source of these substances is thought to be the result of operational tank washings discharged to sea. With this type of pollution on the coast, however, it is usually impossible to identify the specific source.

The majority of these substances have been identified as a form of vegetable oils (e.g. Palm oil, Coconut oil etc. with a fatty acid composition) or mineral oils (hydrocarbons) specifically paraffin oils. These substances are part of a group of chemicals described as MARPOL Annex II high-viscosity, solidifying and persistent floating products.

The carriage of chemicals in bulk is covered by regulations in SOLAS Chapter VII - Carriage of dangerous goods and MARPOL Annex II - Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk. Many high-viscosity, solidifying and persistent floaters have melting points above 0°C that require heating during the voyage and during discharge. With all of these products, the main physical properties at issue are the viscosity and the melting point of the product and its characteristics when discharged to the marine environment as tank washings. They have very low solubility in water and float to the water's surface once discharged, and depending on the water and air temperature, can solidify and form clumps. If washed ashore, beaches may be closed to the public, and cleaning up this material can be expensive.

MARPOL Annex II regulates what can/cannot be discharged as a result of ship's operational practices, and prescribes the conditions under which a discharge into the sea can be permitted. Under MARPOL Annex II, substances are divided into categories (X, Y, Z) according to the level of threat they pose to the marine environment. It seems likely however that both legal and illegal discharges are causing shoreline pollution which is harmful to the environment and requires a range of specific approaches in terms of contingency planning, response and clean up.

This STOP notice aims to pull together best practice for local authorities, ports and private beach owners in dealing with this type of pollution and has been drawn up by the Kent Resilience Forum Marine and Aquatic Pollution Sub Group in conjunction with the MCA, following some incidents along the Channel coastline from Hampshire to Kent during early 2016. Additional input has been provided by Cornwall Fire, Rescue and Community Safety Service. This notice mainly deals with the shoreline response, but the approaches outlined will also assist the MCA in influencing policy and enforcement on this type of pollution nationally and internationally.



Images from MCA: examples of solidified mineral and vegetable oil on the shoreline.



Images from MCA: examples of solidified mineral and vegetable oil on the shoreline.

## 2. Alerting and Response Structure

The local authority or the public may be the first to know of the pollution when it is close to or on the shoreline, alternatively it may be identified at sea by vessels or airborne surveillance. Ideally, the entity/person discovering the pollution should contact Her Majesty's Coastguard and provide as much detail as possible. While not an exhaustive list, the following elements are key:

- Location (both geographically and relatively at the scene)
- Nature of the pollutant (size, shape, colour, appearance)
- Extent (including if there is more in the water than may beach)

Should a local authority or environmental organisation, receiving a report of marine pollution of any type or quantity, or a threat of marine pollution, they should send that information immediately to the nearest Coastguard Operations Centre (CGOC). Organisations sending information to the CGOC should make every practicable effort to provide as much information as possible, the SCAT survey form may be used, and instructions can be found online:

<https://www.gov.uk/government/publications/shoreline-clean-up-assessment-techniques-scat>

Ideally, the local authority should undertake an immediate SCAT (Shoreline Clean-up Assessment Technique) survey to determine the scale and extent of the pollution.

Note: The only initial note of caution is to make sure the material is not whelk egg cases or any other naturally occurring matter that can resemble some types of this kind of pollution. If there is doubt, and it is thought that the discovery is more likely to be a pollution, further investigation should be carried out.

On receipt of reports, the MCA will issue a Pollution Report (POLREP). This will contain any available information on the pollution, the sea conditions and prevailing weather. It will also try to determine the scale of the incident; an assessment of the initial response and follow-up actions being considered.

This is the first phase of the response process and is key to determining the nature and scale of the incident and the subsequent response needed. It will assist in identifying the resources needed, any specialist requirements and public safety issues, should any exist.

As with any response effort clear communication across all response agencies is essential. To ensure such a response, this STOp notice recommends that one single Duty Emergency Planning Officer is identified as the local authority point of contact for the MCA to avoid confused messages.

The Duty Emergency Planning Officer should in turn deal with the various local individuals and organisations that need to be involved in the response.

### **3. Categorising Response**

Local Shoreline Pollution Emergency Plans and the National Contingency Plan (NCP) should be referred to help determine categorisation; Tier 1 or Tier 2 has been the only response to this type of pollution so far, where largely local authority resources have been deployed.

If more than one authority is affected, the incident should be classified as Tier 2 in order that multiagency coordination can be initiated, and the right level of resources and local authority involvement can be determined.

If a Tier 3 response is determined, structures within the NCP such as the Strategic and Tactical Coordination Groups (or their equivalent response organisation within the Devolved Administrations) should be considered/established, with clear lines of communication established between each of the response groups.

### **4. Media Considerations**

It is very possible that commercial media will learn of a pollution incident first, particularly in the era of social media. Media considerations have the potential to feature highly, even for relatively minor pollution events on the shoreline, thus it is important that the response authorities includes a Media Lead. Experience has shown that authorities need to formulate a clear message early and that a single source is needed from the outset to agree and co-ordinate a strong and consistent media message which can be adapted as the response develops. This approach will be vital to respond to and counteract any misinformation being circulated on social media. Ideally just one authority should lead the media response with others asked to contribute to a single message.

A message will need to be agreed even before the material is identified, in order that the media and public know that the situation is in hand, but also to issue advice on people accessing beaches and on dog walking and possible toxicity.

Consistent language should be used to describe the pollution and there should be no assumptions or speculation as to what it might be until tests have established the facts. For example, it might initially be described as a white lumpy material, but if it is identified as a mineral oil, it could be that terminology such as “waxy mineral oil” would provide a more refined definition. Whatever terminology is chosen, the key point is to stick to it throughout all communications relating to the incident.

As the incident response develops, the Media Lead can agree and issue updates to the media and co-ordinate any requests for interviews.

### **5. Beach warning signs**

It is important to get information out quickly, consistent with the media approach. If the substance is unidentified, precautionary messages and warnings need to be clearly promulgated. Again assumptions are to be avoided but precautionary warning such as, “...an unknown white lumpy material...” (tailored to the pollution type) are recommended until identity is known, and guidelines such as, “...walking of pets...” or, “pet animals/dogs should kept on a lead if in the vicinity of pollution” (if they are allowed on the shoreline), should issued both widely and around the scene of the pollution. Though not universal so, some types of vegetable oil such as palm oil may be toxic to both wild and domestic animals.

### **6. Identification (Chemical Analysis)**

Sampling and identification of the pollutant should be a priority from the outset but, whilst awaiting identification, the authority should not delay either the media work or the clean-up operation. Certain approved bodies can undertake chemical analysis and each local authority should have provision for this in their Local Shoreline Pollution Emergency Plan.

Glass jars and wooden spatulas need to be used for collection – contact with metals and plastics should be avoided as it can taint the sample. Until the sample has been identified, it should be considered hazardous and appropriate PPE should be used (e.g. gloves as a minimum). The sample needs to be transported to the analysis centre as quickly as possible. The analysis/testing process may take over two days, so any delays in collection and transportation will only add to any delay in identification.

It is important that the material is identified as quickly as possible, in order that the correct response and disposal method(s) can be used. Also, identification will provide the MCA with vital information to support their investigations as to the potential source of the pollution and (in rare cases) start the process of enforcement and cost recovery.

CEFAS (Centre for Environment, Fisheries and Aquaculture Science), working with MCA, MMO and Defra, are collating a physical catalogue of these samples to aid in the development of a simple identification procedure using basic visual and physico-chemical information. They are also developing a database of identified waxy substances using this process. Therefore, if possible, samples should be sent to their Lowestoft Laboratory for storage within this archive along with some basic information about the substance (see Table 1). Further information about this process and how to access substance identification expertise can be obtained by emailing: [emergency.team@cefas.co.uk](mailto:emergency.team@cefas.co.uk)

**Note:** Where local authorities may wish to engage CEFAS services in terms of identification and analysis, it is recommended that contact is made in advance of any incident to ensure preparedness and agreed procedures.

<b>Sample Details</b>	<b>Description including colour, texture, smell and approximate size/amount</b>
<b>Date Collected</b>	
<b>Collected by</b>	<b>Name/position and organisation</b>
<b>Location (description)</b>	<b>e.g. Beach at Sizewell</b>
<b>Location</b>	<b>Lat/long or grid reference</b>
<b>Quantity Collected (g)</b>	<b>Estimate (will be weighed in laboratory)</b>

Table 1: Sample details requested for database archive

## 7. Waste Disposal

Waxy mineral and vegetable oil require different clean-up, storage and disposal responses. Mineral oil will dissolve plastic, so woven bags are recommended for collection of both types of pollution (if unidentified), but plastic bags can be used if the substance is known to be vegetable oil.

Mineral oil is classified as a hazardous waste and disposal is significantly more expensive, so temporary storage in a well-ventilated location is essential in order that the unidentified material can be removed from the environment immediately before it starts to break down and until disposal methods are determined. This precautionary approach is recommended, to enable more rapid clean-up.

Depending on the potentially differing regulations and safety procedures pertaining to of individual contractors, authorities may have to assume that an unidentified pollutant is hazardous waste from the outset (ahead of chemical analysis); this in order that contractors can commence clean-up immediately and meet their health and safety guidelines. However, having temporary storage alongside this worst-case measure, will avoid unnecessary expenditure if the substance is later identified as non-hazardous.

## 8. Equipment

Collection for testing:

- Glass jars
- Wooden spatulas

Collection ahead of testing using precautionary principles (or if known to be mineral oil):

- Woven bags
- Work gloves
- Steel toe-capped Boots

Well ventilated temporary storage areas

## 9. Post Pollution Monitoring

When the majority of material is removed, the shoreline should continue to be monitored and SCAT surveys repeated. In the short term this is to combat existing pollution recirculates and ending up on the shore again, in the long term it will ensure that any material that has melted into the substrate (particularly for shingle) is identified quickly if it should resurface. Such monitoring may be needed for months following the initial pollution incident. Longer term monitoring should be undertaken using the PREMIAM guidelines (visit [www.cefas.co.uk/premiam](http://www.cefas.co.uk/premiam) for further information).

## 10. Shoreline Types and Clean-up Methods

Removal from shingle and sand may be relatively easy, at least in the early stages of the response before the material crumbles, liquefies or is distributed through the substrate through churning by wave action. However, attempting to remove material from mudflats may be counterproductive and removing from saltmarsh during bird breeding season may cause excessive disturbance. An assessment of the Net Environmental Benefit (NEBA) of the shoreline response should be made before clean-up begins.

Considerations for different types of shoreline should be written into Local Shoreline Pollution Emergency Plans and advice taken from Standing Environment Group.

## 11. Record Keeping and Polluter Pays

Local authorities should record all time and resources spent on the incident from Day 1, this should include the shoreline response and all off-site office based administration and communications. This is important as, should the MCA be able to identify the polluter, cost recovery action may be triggered and, if a valid prosecution is upheld, reimburse of local authority costs can be pursued.

Cost recovery is a complex process and, as well as the costs being recorded, there will be the need to show that authorised response plans had been followed and that resources matched to the needs of the response. Unnecessary effort or wasteful procedures will impact against any claim and the ability to recoup legitimate costs.

Even if the polluter is not identified, this record will be invaluable in building up a national picture of the scale of this pollution and the cost to local authorities and other bodies.

## 12. MCA Work

It is requested that a record of the chemical analysis, the extent of the pollution, the amount disposed of and a timeline of events be provided to the MCA Counter Pollution & Salvage team. The MCA are building a picture of these types of incidents in order to establish a national evidence base. This will be used to support the ongoing work on the impact of these pollutants, and influence the Pollution, Preparedness and Response Group (PPR) on the Evaluation of Safety and Pollution Hazards of Chemicals within IMO. This working group is examining the possibility of amendments to MARPOL Annex II related to the discharge of cargo residues and tank washings of high viscosity, solidifying and persistent floating products. Please forward reports to [HQ\\_counterpollution@mca.gov.uk](mailto:HQ_counterpollution@mca.gov.uk)