

# Why and how to control contamination

## What is this note about?

This note provides guidance on controlling contamination by appropriate handling and storage of Training Samples (TSs).

## Who is this note relevant for?

All dog handlers or instructors training and deploying detection dogs.

## What is contamination?

Something from the environment that adds impurities or hazards to your TS. Or when odours or particles from your TS transfer to you, your dog or your working environment.

## How contamination occurs and why is it important to control?

There are three main ways in which contamination can occur:

### Contamination of your working environment

Also referred to as trace contamination. Trace contamination can occur by:

- using the same hands (with or without gloves) that have handled TSs, to touch other objects such as door handles
- placing explosives on a surface without using a barrier (such as clean paper or a clean clip seal bag)
- wearing clothes used during training, for other purposes and in other areas
- placing used gloves in pockets after use (therefore contaminating the inside of the pocket)



Care must always be taken to avoid trace contamination as dogs and/or detection equipment may alert on areas where trace contamination exists. Whilst this may appear as a false indication to the handler/equipment operator, there may be explosive traces present that are invisible to the naked eye.

### Contamination of the TS by external odours



Also referred to as cross contamination. Cross contamination can occur by exposing TSs to vapours within the external environment including other TSs, odorous packaging, odour scented perfumes, cigarettes, washing powders or odorous food.

Care should be taken to avoid cross contamination of TSs, as the odour of the TS can be altered by contaminant odours. This will affect the way the dog recognises the TS. Dogs may also learn to search for and indicate on the contaminant odour rather than the TS.

### Contamination of the TS by external substances

TSs may become contaminated with external substances (such as soil, sand and detritus) if not protected by a barrier (such as clean paper or a clean clip seal bag).



Care should be taken to avoid contamination of the TS by external substances because the odour of the TS may change. However more importantly, the sensitivity of the TS may also increase, making it more likely to detonate on impact, or due to changes in temperature or pressure.

Many types of explosive are toxic:



- Never touch TS with your bare hands.
- Never allow your dog to come into direct contact with the TS.

## Top tips for preventing contamination

1. Wear nitrile or polythene gloves whenever handling TSs. Keep handling to a minimum and change the gloves regularly.
2. Remove gloves immediately after handling TSs and change gloves in between handling different TSs.
3. Avoid wearing aftershave or perfumes when handling targets and do not place re-usable TSs near strong odours.
4. Do not place TSs directly onto a surface. Instead, place on a barrier. This will prevent dirt from contaminating the TS and prevent the TS from contaminating the surface. See examples of suitable barriers overleaf.
5. Keep a record of where TSs have been placed to identify potential causes of false positive alarms.
6. Carefully inspect TSs after use; safely dispose of any that may have become contaminated or are showing signs of age or damage.
7. Store different TSs in separate, airtight containers.

# Which type of packaging should I use?

Training Sample (TS) packaging should:

- have a low odour and therefore prevent contamination of the TS from the packaging odour. It is therefore advisable to use forensic or laboratory grade containers where possible, as opposed to products designed for household use.
- have low permeability:
  - to prevent TS odour escape through the packaging.
  - to prevent the transfer of odours (from other TSs or any other contaminant) from the external environment into and through the packaging, contaminating the TS.
- provide physical protection to the TS.
- comply with relevant regulations for the safe storage and/or transport of the TS.

As one packaging type rarely serves all of these purposes, TSs are usually packaged using a combination of layers. Below is a suggested packaging method:

Clean packaging should be placed out during searches as a blank. Regardless of how odorous packaging is, dogs should be trained to ignore any packaging layer used; to ensure they are searching for the target odour only, not the packaging odour.

Research into the suitability of the packaging and seal types detailed on this page is ongoing; this guidance note will be updated as and when more suitable packaging methods are identified.

## What barrier should I use?

To prevent contamination, TSs should remain inside their inner packaging layer during searches. Samples of each layer of packaging should also be procured and retained for use as an interferent in training.

However when a TS needs to be removed from its packaging and placed directly on a surface, the TS should be placed on a barrier. This will prevent contamination of the TS by external substances, as well as contamination of the training area itself. Barrier materials should be single-use and disposable. For example, card (as shown below) or waxed paper.



Clean barrier materials should also be placed out in searches as blanks.

This guidance is intended only for use by the stated audience and, in any event, is subject to the limitations stated in the guidance. By making it available, neither Dstl nor any other part of HMG accept any liability whatsoever (except in respect of death or personal injury) for any cost, expense, liability, loss, claim or proceedings arising from any reliance placed on this guidance, however arising.

### Inner Packaging Layer



or



**‘Certified clean’ glassware sealed with a PTFE-lined screw top lid**

‘Certified clean’ glassware has a low odour; the TS is therefore unlikely to become contaminated with glassware odour. It is also impermeable; minimal external odours will pass through the glassware and contaminate the TS. The PTFE-lined screw top lid, when tightly secured, provides an adequate seal.

**Polythene seal-clip bags**

Polythene seal-clip bags help to maintain TS integrity and can also help to mitigate against gross contamination (dust, dirt and detritus). However they provide a poor barrier to potential contaminant odours. The TS therefore requires an additional packaging layer.

### Intermediate Packaging Layer



**Nylon 11 bags (swan necked)**

A Nylon 11 bag adds a second protective barrier to prevent TS contamination. Swan necking provides an adequate seal; it can be achieved by tightly twisting excess material at the top of a bag, looping the twist downwards and securing with an elastic band. Nylon 11 bags have a slight odour associated with them; therefore clean Nylon 11 bags must be placed out as blanks during training.

### Outer Packaging Layer



**Robust containers**

This packaging layer not only protects the TS when being stored and transported, it also provides a final protective barrier to prevent TS contamination.