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The container is then rinsed by filling one-quarter to one-third with clean water, replacing the cap and shaking vigorously for 30 seconds. The rinse is then added to the contents of the spray tank.

This rinsing procedure is repeated a further two times (i.e. three times in all) with a final draining into the spray tank.

Rinsed containers should then be punctured and stored safely with their caps off until they can be properly disposed of.

### Benefits of rinsing

- **Rinsing** ensures that the complete container content is added to the spray mixture.
- **Rinsing** decontaminates containers and ensures they are non hazardous to humans, animals, or the environment.
- **Rinsed** containers are safe to handle.
- **Rinsing** enables containers to be recycled which is a sustainable method of disposal.
- **Rinsing** relieves the farmer from dealing with hazardous waste.
- **Rinsing** provides an incentive to participate in collection schemes and protects the environment.

### Summary

**Rinsing** immediately after emptying is part of Good Agricultural Practice and leads to non hazardous empty packaging.

## Sustainable packaging

### The case for rinsing used pesticide containers



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### What is the legal basis for a non hazardous classification?

In May 2008, the FAO/WHO published "Guidelines on Management Options for Empty Pesticide Containers" in which it recommended (p15) that countries should classify properly rinsed containers that have been inspected as non hazardous.

In the United States, the federal Resource Conservation and Recovery Act (RCRA) of 1976 makes it illegal to dispose of any pesticide or pesticide-related waste by burning, dumping, or well injection. Any container with unused pesticide, including residue, is considered to be hazardous waste which may harm humans, animals or the environment. However, properly rinsed containers are not considered hazardous waste and can go to an approved recovery/recycling centre or to landfill.

In many other countries it is the concentration of active ingredient left behind after rinsing that is used to determine whether a consignment of waste containers is hazardous or not.



Recycling of plastic pesticide containers

In Europe, threshold concentrations have been set for the different categories of active ingredient. The limits depend on the hazardous nature of the active ingredient concerned. Waste consignments containing active ingredient concentrations below these limits are classified as non hazardous.

The concentration of the active ingredient is expressed as a percentage of the total weight of the waste consignment. There is a wide range of threshold limits with the lowest European limit being 0.1% w/w for 'Very Toxic' active ingredients.

### Determining whether rinsed containers are hazardous or not under practical conditions

A comprehensive programme of analytical work using the lowest European limits has been carried out in a number of countries.



Collection point for rinsed pesticide containers (Guatemala)

The objective of the programme was to compare the concentration of a wide range of active ingredients found in consignments of plastic pesticide containers with the threshold limits.

**Analytical Work:** statistically valid samples of containers were obtained from consignments collected by the national collection scheme in Germany.

A method of analysis was developed that was capable of detecting and quantifying a wide range of active ingredients in the consignment samples.

The method developed was able to analyse the total active ingredient *adhering* to the containers' walls, together with that which had *migrated into* the walls.

Over 200 different samples were analysed involving 51 active ingredients.

**Results obtained** (see figure 1 below): The results obtained showed that the cumulative concentration of 'Very Toxic' active ingredients in consignments was well below the lowest threshold limit of 0.1%.

These results have been repeated in France, Brazil, Poland and Canada.

**Consignments of rinsed containers are therefore non hazardous.**



Rinsed containers are free of residues

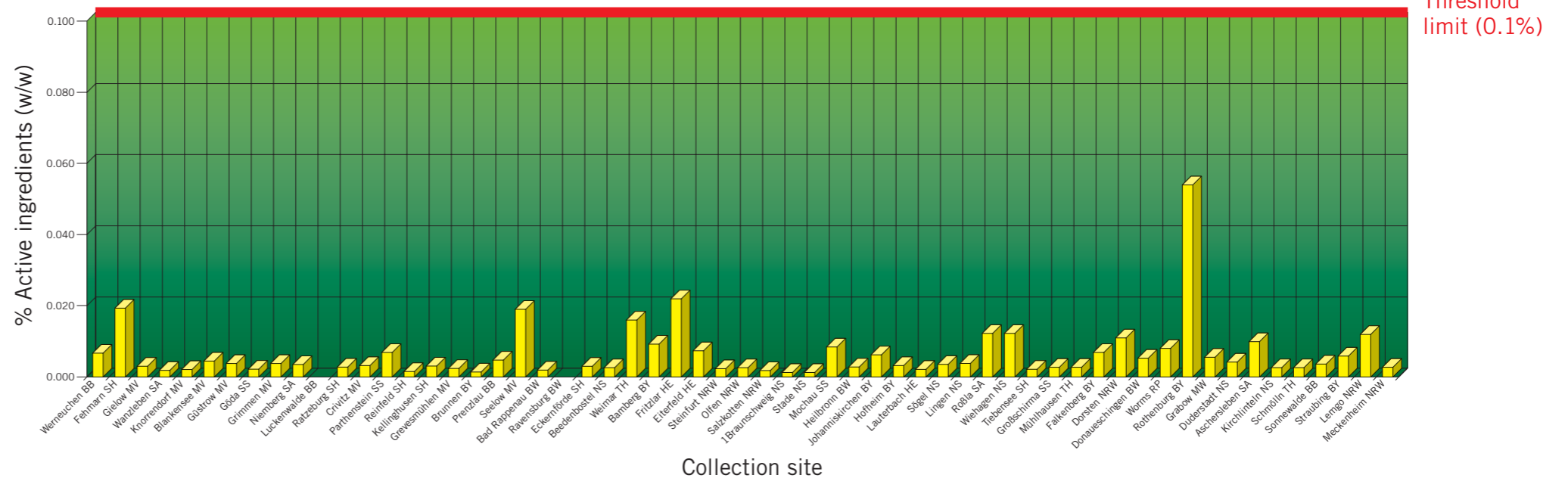
### How can containers be rinsed?

Empty pesticide containers can be effectively rinsed in different ways – pressure rinsing using equipment that comes with the sprayer, or 'triple rinsing', which can be done without the use of special equipment.

#### Triple rinsing – how is it done?

Even when the container appears to be empty of pesticide it needs a final draining. The container is inverted over the spray tank or mixing tank and allowed to drain for at least 30 seconds until the flow has slowed down to a drip.

Figure 1: Concentration of pesticides in containers collected in Germany in 2007.



Threshold limit (0.1%)