



Improving Chemical Safety in the Biological Laboratories at Institut National d'Hygiène Rabat, Morocco



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Introduction

Established in 1930, the Institut National d'Hygiène is the central public health laboratory in Morocco and has 23 biological laboratories. Biosafety is managed across the institute by 18 Biosafety Officers (BSO) forming the institute biosafety committee and institute biosafety team.

Rationale

The 18 BSO's are well trained in specific biosafety aspects of their roles but were perceived to lack essential competencies in safe chemical management – a high reliance was placed on the chemical safety focal point – Nezha Barakate. A gap was identified requiring the following:

Project Goal

Establish training and educational needs of institute biosafety team; develop and deliver tailored training in: **'Safe handling, use, storage and disposal for all chemicals used in the biological laboratories'**

Project Objectives

- 1. Establish** and agree with INH Biosafety committee the following: Roles, responsibilities and knowledge base of BSO's in 'safe use, handling, storage and disposal of laboratory chemicals'. Document new roles agreed with top management, update 'Responsible Biosécurité'.
- 2. Measure** current knowledge and practice through unannounced physical inspections followed by a targeted anonymous questionnaire.
- 3. Develop** training toolkit (include theory, practical and demonstration elements) adapted to needs based on measured knowledge & practice.
- 4. Deliver** training to the 18 persons making up the biosafety team.
- 5. Measure** performance by post training testing and inspections.

Project Timeframe

1st February – 31st July 2019: INH project activity (excluding reporting).

Statistics

32 surveys (18 pre and 18 post training); 253 physical lab inspections

Outcome

Success of the project was clearly evidenced by resulting increases in surveyed knowledge and practice observed by the physical inspections.

Next Steps

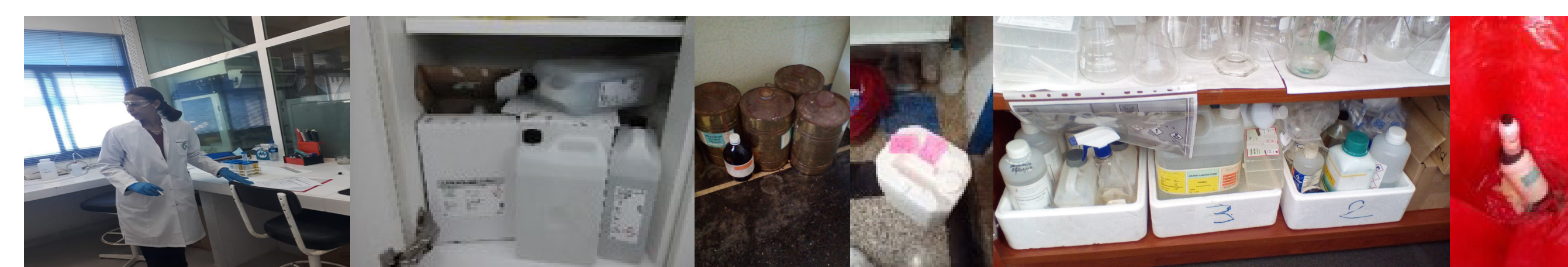
Adapt and extend training to all INH laboratory staff and then to the wider national laboratory network including related departments (i.e. animal health) other national institutes and their laboratory facilities – this process has begun already with requests being received from l'Institut Pasteur du Maroc (IPM), L'Office National de Sécurité Sanitaire des Produits Alimentaires (ONSSA) and the regional labs of the MoH.

Acknowledgements

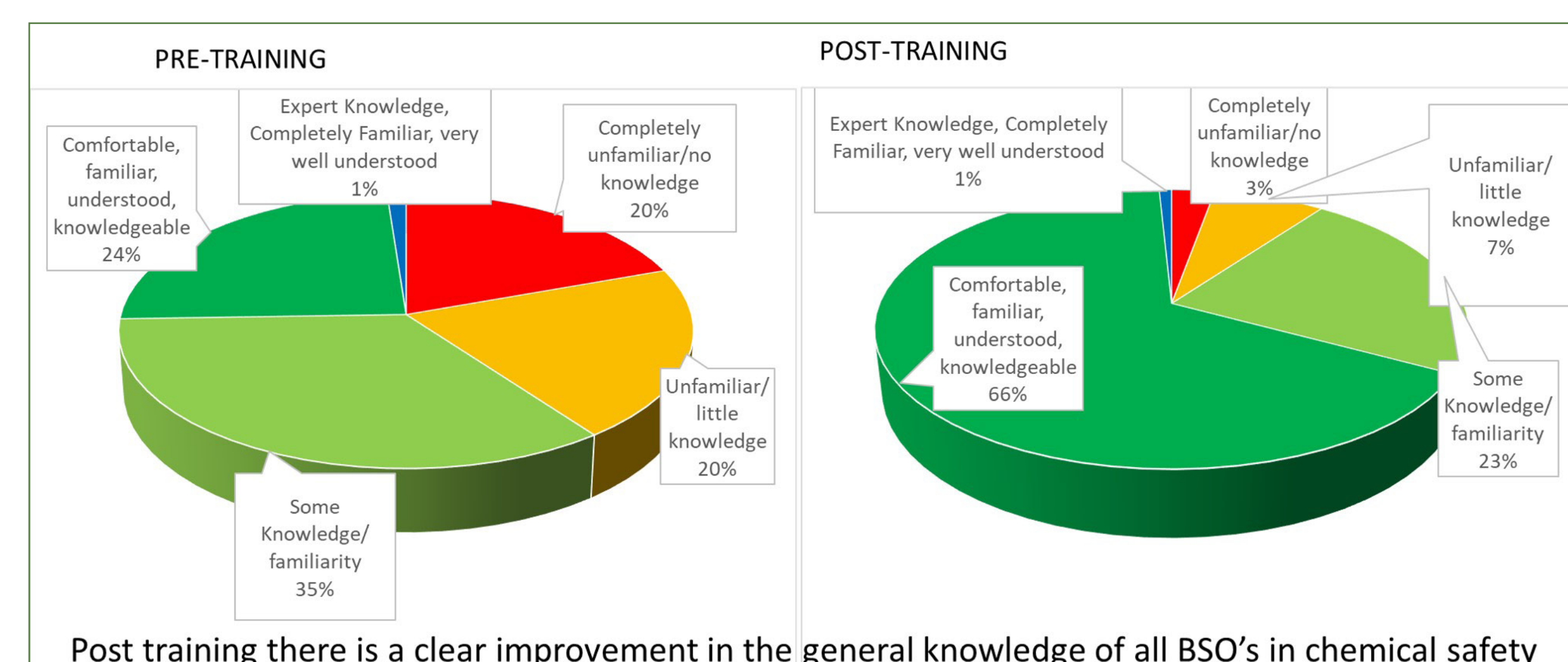
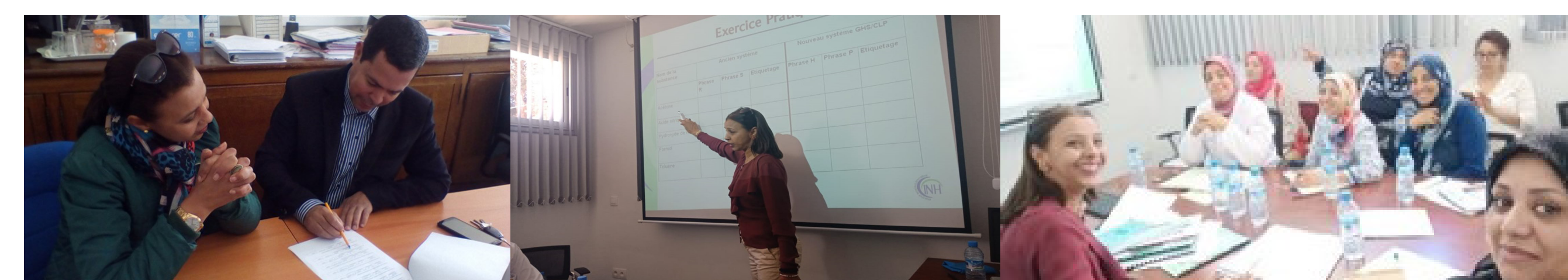
- Institut National d'Hygiène, Rabat, Morocco
- US Department of State Biosecurity Engagement Program
- US Defence Threat Reduction Agency
- Sandia National Laboratories
- Sandia twins round VIII & IX 2019

Actions Completed

- Conducted 1 x static inspection per lab (23) to identify infrastructure gaps and repeat annually – fix gaps with new projects
- Conducted 3 x dynamic pre-inspections (pre training and pre-questionnaire) per lab (23 total labs); so 69 lab inspections
- Conducted 18 pre-training tests for Biosafety staff after the lab inspections but before the training can be developed
- Collected results, analyse and report – Training targeted to close gaps in knowledge and understanding then designed
- Conducted 1 day training using bespoke materials developed on basis of gap analysis (above tests and inspections)
- Conducted 18 post-training tests for Biosafety staff after the training delivery
- Conducted 69 dynamic post-training lab inspections (by same inspector using same checklist for initial pre-inspections)
- Biosafety team conducted 4 inspections each on own responsible laboratory for all 23 laboratories = 92 inspections
- Collected results, analyse and report; complete final report and present to Sandia at final wrap up workshop



Above: images of the unannounced pre-training inspections; below questionnaire completion and training sessions



Images clearly illustrating the broad improvement of storage and labelling of lab chemicals and waste, and the associated improvements generally on the working surfaces of the laboratories



Pre-training

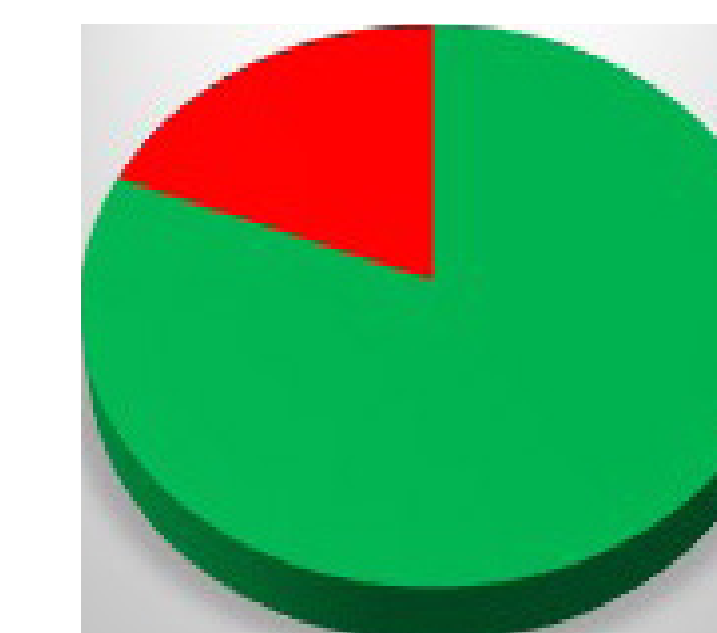


Post-training

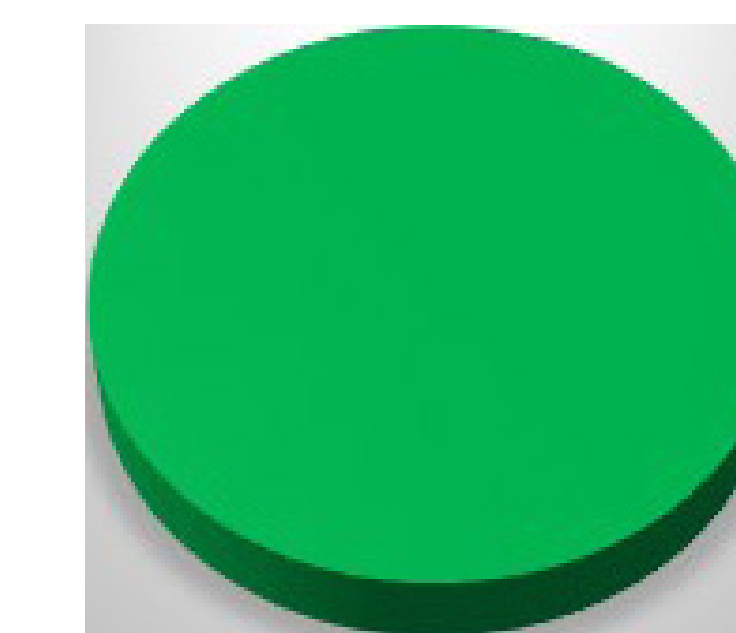
Laboratory Inspection Results

Pre-Training

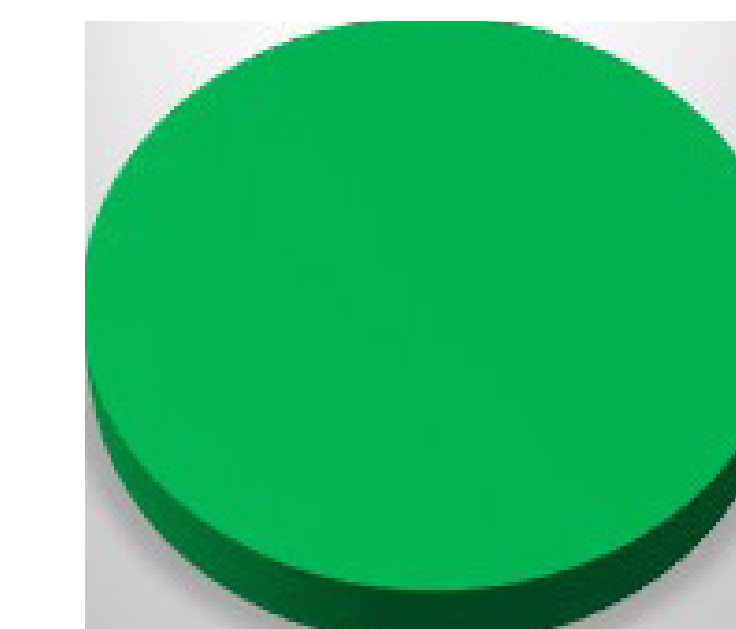
Are lids placed on the containers and are they securely closed



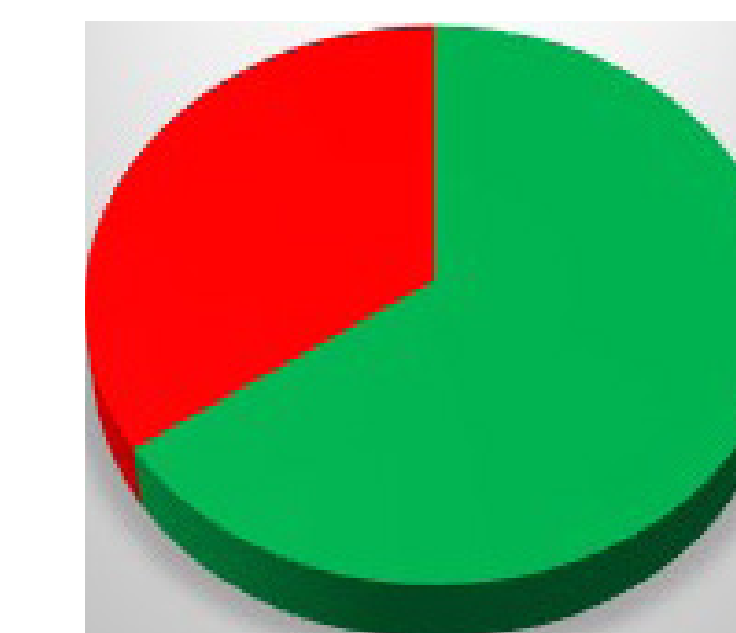
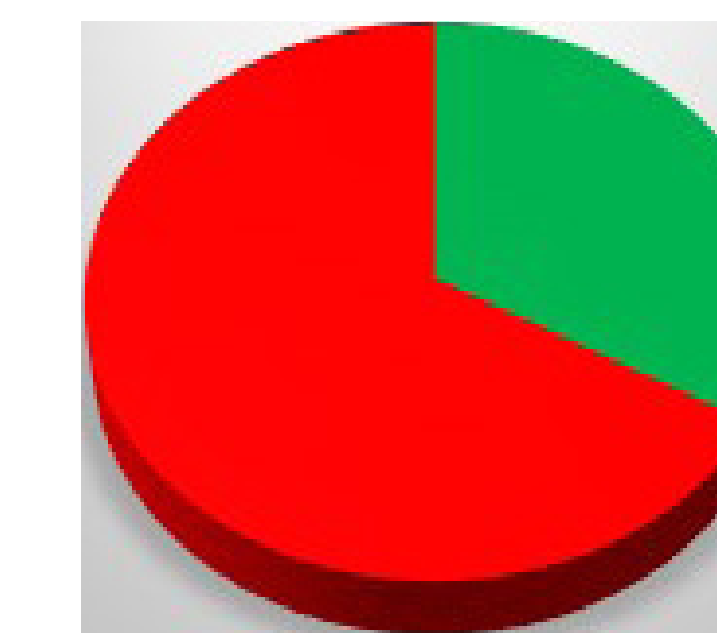
Post-Training



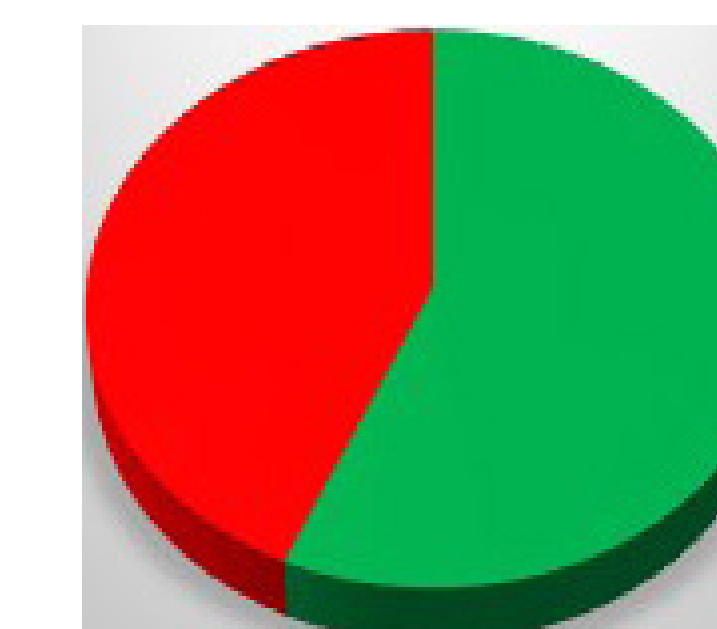
Are the containers clean and safe to handle (no evidence of spillage or on external surfaces)



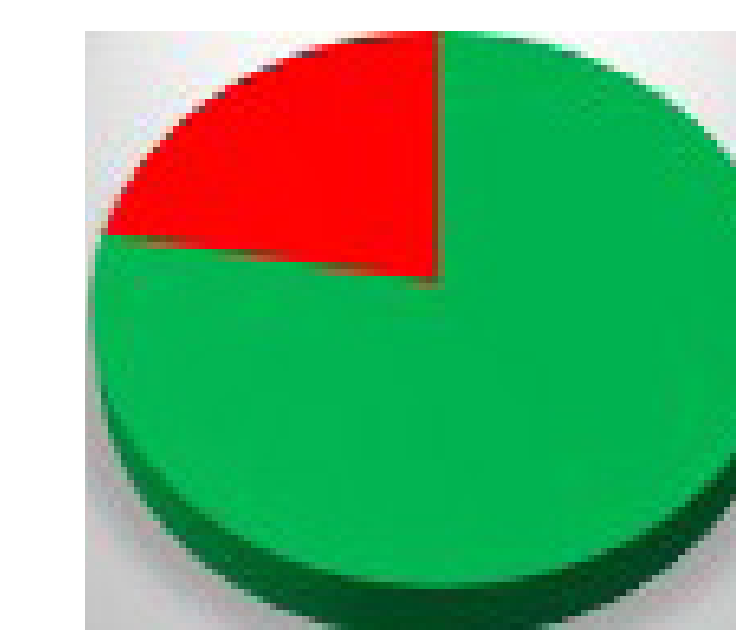
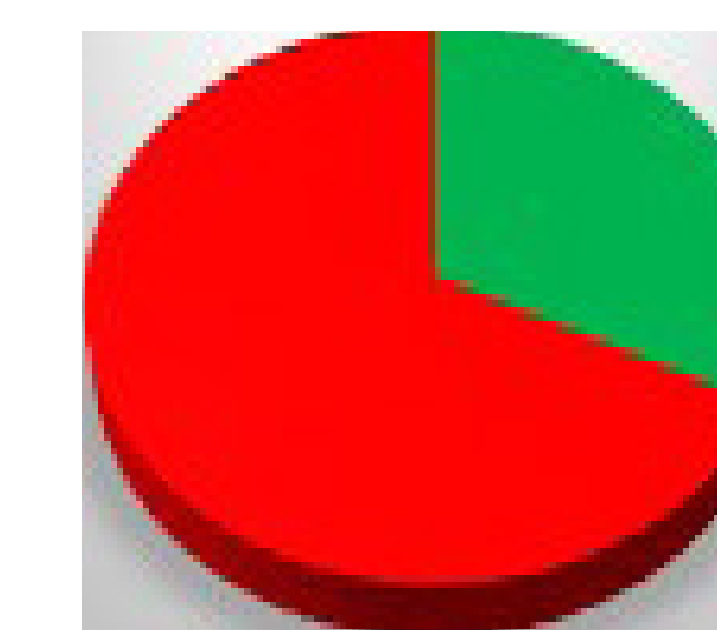
Are the containers correctly labelled according to the actual contents (including waste).



Are the containers and contents 'in date' (is there a 'use by' or expiry date).



Are containers ALL put away and correctly stored in an appropriate location/ storage area/ cupboard (not found out on benches/ by sinks etc.).



Are containers correctly segregated according to hazard class/properties?

