

# PART 1: MANUAL FOR HAZARD COMMUNICATION COMPREHENSIBILITY TESTING

## 1. Introduction

This instrument has been developed for the sub-committee of NEDLAC charged with investigating the feasibility of adopting the Global Harmonised System of Chemical Hazard Communication (GHS). It builds on previous work conducted for the International Labour Office (ILO) Working Group on Hazard Communication as part of international efforts to promote the GHS. The tool aims to provide a methodology for the assessment of the comprehensibility of labels and Safety Data Sheets (SDS's) for chemical hazards and adapts the ILO methodology for rapid testing to support the South African feasibility study. The tool has been developed by a multidisciplinary team at the University of Cape Town with a particular focus on addressing the needs of workers and consumers in developing countries. The study has been funded by the Fund for Research into Development, Growth and Equity (FRIDGE) with the support of the United Nations Institute for Training and Research (UNITAR).

The basis for the development of the instrument is contained in a background document titled "Hazard Communication Comprehensibility Study" which sets out the context, assumptions and goals of the project in relation to research findings in the literature, which is available from the Occupational and Environmental Health Research Unit on request<sup>1</sup>. The emphasis of instrument development has been to provide a tool that is, as far as possible, globally applicable taking into account varying levels of literacy and differences in cultural experience.

## 2. Overview of the Testing Instrument

The complete testing instrument developed for the ILO consists of 11 modules. In this rapid adaptation, 8 modules have been included, and the modules have been considerably shortened for current use.

Broadly speaking, the original ILO instrument consists of three parts:

- **Modules 2 to 8** constitute the core of comprehensibility testing. These include a general questionnaire (module 2) and a set of labels and Safety Data Sheet questions and exercises (modules 3 to 8).
- **Module 10** contains a final post-test questionnaire applicable to all participants in the questionnaires (modules 2 to 8). It is also administered to participants in the group exercise (Module 11). The questionnaire is focused on training, and past experience, and offers an opportunity for open-ended feedback and comment on the testing process.
- **Module 11** is a group exercise for workers that draws on elements in previous modules and is intended to test comprehensibility in the context of group learning. It is designed to complement modules 2 to 10 but is carried out on different subjects to those in modules.

Table 2.1 summarises the modules retained and adapted in the South African testing instrument, the main activities in the modules, and objectives and outcomes derived from each module.

Note that the numbering in the table below retains the original numbering from the ILO instrument for easy comparison, even though only 8 modules have been retained for the South African study. For the purpose of rapid testing in South Africa, modules 1, 6 and 9

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have not been retained. A summary of testing modules per sector used in the South Africa is listed in Table 1.1.

<b>SECTOR</b>	<b>MODULES TESTED</b>
Transport	2, 3, 4, 5, 7, 8, 10
Agriculture	2, 3, 4, 5, 7, 8, 10, & 11
Industry	2, 3, 4, 5, 7, 8, 10, & 11
Consumers	2, 3, 4, 5, 7, & 10

## **2.1 Use of the Manual and the Testing Instruments**

Each module is the actual test questionnaire for a specific set of comprehensibility testing objectives. The layout of the modules is such that instructions are clearly marked in the questionnaires for those administering the comprehensibility tests. Accompanying each module, but presented at the end of this manual, is a summary of each module and labels or SDSs used for that module.

Labels and SDS's used in testing must as far as possible reflect the typical local usage patterns. Therefore, sample labels and SDS's provided with this manual, are intended to reflect as far as possible local South Africa use. Feedback and evaluation will be required in the course of testing in this regard.

Notwithstanding attempts to simplify the relatively complex testing procedures required to measure hazard communication comprehensibility, the test instruments require careful administration and quality control. Training of interviewers is therefore critical.

<b>Table 2.1 Comprehensibility Testing: Objectives and Outcomes by Module</b>		
<b>Module</b>	<b>Contents</b>	<b>Objectives</b>
Module 2	General Interview	<p>To ascertain demographic and other data as a basis for analysis of comprehensibility.</p> <p>To clarify competence in colour and visual acuity necessary for some of the subsequent tests.</p> <p>To collect data on work experience, critical to interpretation of comprehensibility assessments.</p>
Module 3	Recall, reading, and comprehensibility of labels and SDS's	<p>To evaluate subjects' familiarity with a label and a SDS.</p> <p>To test subjects' recall of label elements.</p> <p>To evaluate the sequence used to look at label elements.</p> <p>To test the comprehensibility of signal words, colours, symbols and hazard statements.</p> <p>To assess the impact of the label on the subjects:</p> <ul style="list-style-type: none"> <li>- Ranking of hazard, both to self and to spouse or child</li> </ul> <p>Can subjects correctly identify the appropriate SDS?</p> <p>Can subjects correctly identify information on chemical name, health hazard, physical hazard and use of protective clothing?</p>
Module 4	Rating and Understanding of Hazards: Colours and Symbols	<p>To test subjects' relative ranking for severity of hazard for colours and symbols.</p> <p>To test understanding of signal words, colours, and symbols.</p> <p>To test opinion on the ability of signal words, colours, and symbols to attract attention.</p> <p>To test whether subjects' perception of the label will influence their reported intention to use, store or dispose of the chemical.</p> <p>To explore subjects' views as to why hazard elements are present on a label.</p>
		<b>Outcome</b>
		<p>Relevant demographic and other data for linking to study results and analysis.</p> <p>Colour and visual acuity assessed.</p> <p>Role work experience plays in comprehensibility.</p>
		<p>Identify a priori familiarity with labels and SDS's.</p> <p>An assessment of the impact of signal word proximity to icon.</p> <p>Identification of poorly understood elements terms.</p> <p>Identify statements with highest comprehensibility.</p> <p>Hazard ranking, and intention to behave as a result of the label</p> <p>Comparison of ranking of hazard to self differs from ranking of hazard to a close relative.</p> <p>Identifying whether subjects can link data from a label to an appropriate SDS in a meaningful way.</p> <p>Colours and Symbols will be rated for ability to denote level of hazard, and for comprehension.</p> <p>Quality control assessment of face validity of ranking.</p>

Module 5	Comprehension of hazard symbols	To test subjects' understanding of symbols representing hazard classes. To test subjects' understanding of concepts of hazard classes.	Ability to identify the correct symbol for a hazard class Identification of hazard classes for which symbols perform poorly; and of symbols which perform poorly as indicators of a hazard class. Identify symbols with ambiguous interpretations.
Module 7	Pictogram Comprehension - Additional Testing	To test subjects' understanding of pictograms	Comprehensibility of pictograms
Module 8	Comprehensibility of Safety Data Sheets (SDS's) by Organisation of Data	To test subjects' ability to identify safety information from a SDS. To test the understanding of hazard information on a SDS. To evaluate what the subject reads on a SDS To assess what information is useful, appropriate and understandable. To assess whether SDS information is related to intention to behave in safe ways.	Comprehension of SDS hazard information from: 1) interpretation of health hazard information; 2) Self-assessment of understandability to others; 3) scoring of explanation to a third party; 4) Reported intention to behave. Agreement between these 4 measures of understanding will be estimated. Subjective assessment of the usefulness and appropriateness to identify areas for further review of SDS development.
Module 10	Post Interview/Post Stimulation Interview	To ascertain past history of contact with chemicals and training. To test the effect of a brief explanation of symbols, signal words, colours and hazard statements on ranking for severity of hazard, and comprehension. To identify chemical information needs from subjects.	Variables derived from training and past experience for stratified analysis of responses to earlier modules. Results will indicate role for training. Responses to questions on needs for chemical information can be useful to GHS efforts on chemical safety.
Module 11	Group Exercise - Comprehension	To test whether learning about hazard communication happens differently in a group context than with individuals. To test whether subjects working as a group come up with significantly different answers than when individual subjects are asked a questionnaire.	Quality control on the effect of group versus individual learning. Groups coming up with significantly different responses from individuals indicate that the testing model needs to be revised. Implications for how training should be addressed in future as an element of hazard communication.

## **2.2 General Issues for Testing**

### **2.2.1 Consent**

Before conducting any of the modules in this instrument, participants should first give informed consent. To do so, the purpose of the exercises should be explained to them as well as the procedures that will be asked of them. Participants should not be coerced into participating and should know that they have the right to withdraw their participation at any time. The nature of the information provided in the consent procedure is sufficiently generic so as not to give away the explicit hypotheses being tested.

Consent procedures are outlined in the opening section of module 2 (commencement of interviews). Irrespective of whether the same subjects complete all modules or not, a consent procedure must always be applied.

### **2.2.2 Policy on rewards or compensation to participants**

Each participating respondent in this study is to be given a certificate for participating in the study. Consumers will receive a modest payment (R50) for giving up their time to participate. Participants from the transport and industry sectors receive a label card explaining the meaning of GHS and commonly used symbols. Participants from the agricultural sector receive a pesticide label training card which explains the meaning of pictograms and colour codes found on South African pesticide labels.

## **3. SAMPLING**

### **3.1 Target populations**

Target populations are outlined in the Tables 2 and 3 below, consistent with the sectors targeted for the GHS assessment.

#### **3.1.1 Questionnaire and experimental design**

Different sub-populations of working and non-working people will have different experiences that influence their comprehension of hazard communication messages. Modules 2 to 8, and module 10 will test comprehension under different experimental conditions. Tables 2 and 3 outline a sample based on sample size calculations combined with considerations of logistical ease.

As far as possible, the selection of participants within earmarked groups should be done as representative a sample as possible, using random selection. This is critical for generalisability of the results. However, it is recognised that random selection may be very difficult to achieve in practice. Nonetheless, it should be borne in mind that whatever selection is used, it should seek to generate a sample as representative as possible.

#### **3.1.2 Group Learning**

Module 11 is included to test comprehensibility in the context of group learning. It is applied only to workers and will need participating workers separate from workers completing Modules 2 to 10. Groups should aim to be homogenous for literacy level and approximately equal numbers literate and non-literate groups. Each group should not be larger than 10 and not smaller than 6.

#### **3.1.3 Context**

The context under which comprehensibility testing is carried out is crucial to the accurate evaluation of meaning and understanding. This is particularly so amongst workers with little formal education who use contextual cues to improve their understanding of hazard messages. For this reason, the bulk of testing in this instrument makes use of complete labels rather than elements of a label or SDS. While well-educated subjects may find it conceptually easier to respond to the isolated elements, the interpretation of such elements may have little bearing to real world learning situations. For this reason, all testing is to be conducted using realistic labels and SDS's.

To standardise opportunities for comprehension, the actual chemicals identified in the labels will be spurious chemicals, although made to look as if they could be genuine agents. This aims to retain context, while not disadvantaging those unfamiliar with a particular chemical.

## 3.2 Sample

Four main categories (sectors) have been identified in the proposal for sampling:

- **Industrial** (to include workers, managers, factory laboratory scientists, supervisors)
- **Transport** (including road, rail, air and sea transport)
- **Agricultural** (to include farm workers, managers and other related agricultural categories)
- **Consumer**

### 3.2.1 Stratification and sampling

In each category, 100 subjects, 50 each from the Western Province and Gauteng, will be included.

- Avoid sampling clumps of workers from one site as this will introduce a design effect. It may still be able to achieve economy of scale by interviewing the same overall number of workers, but from nearby plants.
- Strata will be pooled across both provinces. Some strata may not exist or may be over-represented in some Provinces.
- Because the chemical industry is an important user and generator of chemicals, it will require some over-sampling of the industry, to the order of 25% of the industrial sector sample from the Chemical Industry, with the balance of 75% spread across the ILO SIC sectors (see detailed notes below).
- Important categories to include in the non-chemical sector are health care, domestic works, and cleaning industries.

Besides the provincial categories, the following factors will be used as criteria for stratification:

- For all occupational (industry and transport) categories – the size of operation: Small (< 20 employees); Medium (20 to 199 employees); Large (>200 employees)
- For the industrial category, to distinguish chemical versus non-chemical, and select randomly from all non-chemical industrial sectors.
- For agriculture, the size of the operation is less important than the character of the agricultural operation. The strata of large commercial (including agribusiness), small commercial, emergent farmer and state-run farms will be used. In addition, we will have a stratum for pesticide retailers.
- For transport, the size of the operation will be used, as will transport employees employed by companies sampled in the industry sector.
- For consumers, we will use opportunistic sampling from supermarkets, laundromats, hairdressers and hardware shops, stratified by urban and rural consumers. Data collected on consumers will carefully assess any workplace experience relevant to their knowledge and awareness of chemicals.

### 3.2.2 Using the ILO Standard Industrial Classification to stratify sampling

The Standard Industrial Classification, which is an ILO classification, has in the South African adaptation (CDD, 1993), 10 Major Divisions, including agriculture, and transport. Of the other 8 major divisions, we have excluded financial services (Major Division 9) because of the low relevance of chemical hazard classification for this sector. Hence, our sector "Industrial" includes 7 SIC Major Divisions. The biggest SIC division is manufacturing, of which

“Chemical” is one of 70 sub-categories. For our sampling strategy, it is weighted higher (25% of subjects) than other manufacturing sectors (7.5% each) given its high use and high generation of chemicals. The other Major Divisions contained within our rubric of “Industrial” (n=6) are weighted at 10% (n=20) each.

The “Industrial” sector therefore includes 200 subjects, equal to agricultural (including forestry, = SIC Major Division 1), and transport (SIC Major Division 7). Consumers also include 200 subjects. However, no attempt is made to identify the spread of ‘consumership’ since there is no standard classification or sampling frame for consumer activities available. We have therefore chosen a spread of consumer activities that include potential buyers of chemicals (hardware or paint shops, supermarkets), as well as ‘captive’ consumers (Laundromat or hairdressing clients) who may, or may not be consumers of chemicals at a different point in their consumer life. Note that the tool includes careful attention to occupational history of consumers to ensure that the results are not confounded by workplace exposure to health and safety training amongst people who are both consumers and workers in ‘high-risk’ industries.

A tabulated sampling outline (Table 3.1), and a sampling protocol (Table 3.2) are presented below:

Table 3.1 Sampling Strategy for Sectors			
	SIC Division	Western Cape and Gauteng	Strata based on#:
<b>INDUSTRY TOTAL</b>			<b>100 SUBJECTS</b>
Chemical Industry	Major Division 3 Division 33 Major groups 334, 335	30 subjects	• Size of operation
Non-chemical industry		70 subjects	
<i>Mining</i>	Major Division 2	10	
<i>Other manufacturing 1: Paper</i>	Major Division 3 Division 32 Major groups 323	5	• Size of operation
<i>Other manufacturing 2: Textiles</i>	Major Division 3 Division 31 Major groups 311, 312	5	• Size of operation
<i>Electricity, gas and water</i>	Major Division 4	10	• Size of operation
<i>Construction</i>	Major Division 5	10	• Size of operation
<i>Wholesale and retail trade and hotel and repair</i>	Major Division 6	10	• Urban / rural • Size of operation
<i>Community and social service - health care</i>	Major Division 8	5	• Size of operation
<i>Community and social service – cleaning services</i>	Major Division 8	5	• Size of operation
<i>Private household - domestic service</i>	Major Division 10	10	• Urban / rural •
<b>TRANSPORT TOTAL</b>			<b>100 SUBJECTS</b>
Land Transport - vehicles (Employees in	Sampled from Major Divisions	15 subjects	• Size of operation

industry who do (transport)	2 to 6 above		
Land Transport - vehicles	Major Division 7 Division 71 Major group 712	35 subjects	• Size of operation
Railways	Major Division 7 Division 71 Major group 711	25 subjects	
Sea transport	Major Division 7 Division 72 Major group 721	12-13 subjects	
Air transport	Major Division 7 Division 73	12-13 subjects	
<b>AGRICULTURE / FORESTRY TOTAL</b>			<b>200 SUBJECTS</b>
Agriculture - Agribusiness / large commercial farming	Major Division 1	20 subjects	• type of employee
Agriculture - Small commercial farming	Major Division 1	20 subjects	• type of employee
Agriculture - Emergent farmers	Major Division 1	20 subjects	• type of employee
Agriculture - state farms	Major Division 1	20 subjects	• type of employee
Agriculture - retailers	Major Division 6	10 subjects	Large and small type of employee
Forestry - Working for Water personnel	Major Division 1	10 subjects	• type of employee
<b>CONSUMER TOTAL</b>			<b>100 SUBJECTS</b>
Supermarket Consumers		60 subjects	• <i>Urban / rural</i>
Laundromat Consumers		15 subjects	• <i>Urban / rural</i>
Hardware or paint store Consumers		15 subjects	• <i>Urban / rural</i>
Hairdresser or cosmetic Consumers		10 subjects	• <i>Urban / rural</i>

# Size of operation: For Manufacturing, criteria will be: Small = 0 – 19 employees; medium = 20 to 199 employees; large = 200 or more employees. Sampling will aim for a balance of approximately 40% small; 30% medium; 30% large

\* Note that our category of non-chemical industry includes both Major Divisions (n=6) of the Standard Industrial Classification as well as 2 major groups, which are sub-divisions of the Major Division 3 of Manufacturing. This is because of trying to balance the need to highlight chemical manufacturing within the overall needs of industry generally with regard to the GHS.

Table 3.2 Sampling protocol by stratum

I. INDUSTRY				
	Per plant / mine / workplace	Every second workplace / where available (about 50%)	Approximate # of workplaces required	Routes to selecting actual sample
Chemical Industry (n=30)	1-2 production workers; 1 safety rep or shop steward	1 manager / supervisor 1 laboratory staff member	12 (5 small; 3-4 medium; 3-4 large)	CAIA membership Dept of Labour databases Chamber of commerce
Non-chemical industry				
<i>Mining (n=10)</i>	1-2 production workers; 1 safety rep or shop steward	1 manager / supervisor 1 laboratory staff member	4 mining operations	Chamber of Mines DME Inspectorate <i>Trade Unions</i>
<i>Other manufacturing 1: Paper (n=5)</i>	1-2 production workers; 1 safety rep or shop steward	1 manager / supervisor 1 laboratory staff member	2 (1 small; 0 or 1 medium; 0 or 1 large)	<i>Employer bodies</i> <i>Trade Unions</i> Dept of Labour databases
<i>Other manufacturing 2: Clothing/Textiles (n=5)</i>	1-2 production workers; 1 safety rep or shop steward	1 manager / supervisor 1 laboratory staff member	2 (1 small; 0 or 1 medium; 0 or 1 large)	<i>Employer bodies</i> <i>Trade Unions</i> Dept of Labour databases
<i>Electricity, gas and water (n=10)</i>	1 production worker; 1 safety rep or shop steward 1 manager / supervisor 1 laboratory staff member		2-3 workplaces	<i>Employer bodies</i> Dept of Labour databases
<i>Construction (n=10)</i>	1 production worker; 1 safety rep or shop steward	1 manager / supervisor	4 workplaces (2 small; 1 medium; 1 large)	<i>Employer bodies</i> Dept of Labour databases
<i>Wholesale and retail trade and hotel and repair (photo labs; dry cleaners) (n=10)</i>	1-2 production workers; 1 manager / supervisor		4 workplaces (2 small; 1 medium; 1 large)	Johannesburg, Pretoria, East Rand, Cape Town Chambers of Commerce
<i>Community and social service - health care (n=5)</i>	1 unskilled worker; 1 skilled worker (e.g.	1 manager	2 health facilities or nursing homes, or laboratories	<i>Health Department</i> <i>Trade Unions</i> Dept of Labour databases

	nurse) 1 laboratory personnel			
<i>Community and social service – cleaning services (n=5)</i>	1-2 production workers	1 manager / supervisor	2-3 cleaning firms or cleaning units	Employer bodies Trade Unions Dept of Labour databases
<i>Private household - domestic service (n=10)</i>	1 domestic worker	1 employer	7 workplaces	May recruit employees separately from employers – e.g. former through trade union or advice offices; latter as consumers, or via employer bodies
<b>II. TRANSPORT</b>				
	Per depot / workplace		Approximate # of workplaces required	Routes to selecting a sampling frame
Land Transport - vehicles (Employees in industry who do transport) (n=15)	1 driver or driver's assistant from about 50% of the 'industrial' workplaces above		15 workplaces (in same ratio 6:4.5:4.5 for small:med:large )	As above
Land Transport - vehicles (n=35)	3 drivers or driver assistant 1 manager 1 store operator		7 workplaces (in same ratio 3:2:2 for small:med:large )	Employer bodies Trade Unions Dept of Labour databases
Railways (n=25)	1 driver 3 general workers (including labourers, loaders, sprayers) 1 supervisor		5 depots	Employer bodies Trade Unions IHRG Dept of Labour databases
Sea transport (n=12-13)	2 stevedores 1 manager or supervisor 1 seafaring labourer		3 merchant depots	Employer bodies Trade Unions <b>IHRG</b> Dept of Labour databases
Air transport (n=12-13)	4 transport drivers 2 security personnel 1 supervisor 1 other (e.g. cargo loader)		2 airports	Employer bodies Trade Unions
<b>III. AGRICULTURE / FORESTRY</b>				
	Per workplace		Approximate # of workplaces required	Routes to selecting a sampling frame
Agriculture - Agribusiness / large commercial farming (n=20)	1 worker sprayman 1 non-sprayer 1 safety representative 1 family member 1 supervisor		4 farms / agribusinesses	Agriculture South Africa Department of Agriculture Dept of Labour databases
Agriculture - Small commercial farming (n=20)	Farmer 1 worker sprayman 1 non-sprayer 1 family member 1 supervisor		4 farms	Agriculture South Africa Department of Agriculture Dept of Labour databases

Agriculture Emergent farmers (n=20)	- Farmer 1 sprayman 1 worker 1 family member	5 farms	NAFU Department of Agriculture
Agriculture state farms (n=20)	- 1 worker sprayman 1 non-sprayer 1 safety representative 1 family member 1 supervisor	4 farms	Department of Agriculture Dept of Labour databases
Agriculture retailers (n=10)	- 1 sales agent 1 manager 1 outreach person	3 - 4 Units	AVCASA NAFU Department of Agriculture
Forestry Working for Water personnel (n=20)	- 1 Contractor 1 sub-contracted worker 1 family member WfW area managers	2 - 3 Units	Working for Water programme, DWAF
<b>IV. CONSUMER</b>			
Supermarket Consumers (n=60)	6 subjects selected on 1 randomly selected day; M:W = 50:50	3 large urban supermarkets 2 urban shops 2 township spaza shops 3 rural shops	Large supermarket chains Township civic organisations Rural town councils
Laundromat Consumers (n=15)	5 subjects on 1 randomly selected day; M:W = 50:50	3 laundromats	Laundromat owners
Hardware or paint store Consumers (n=15)	3 subjects on 1 randomly selected day; M:W = 50:50	3 urban h/ware stores 2 rural h/ware stores	Hardware chains Paint store owners
Hairdresser or cosmetic Consumers (n=10)	5 subjects on 1 randomly selected day; M:W = 50:50	2 hairdressing salons or cosmetic shops	Hairdresser owners Cosmetic companies Store owners

Sample sizes for the sub-groups will not generate independent estimates for the groups but will give a good summed precision estimate for overall comprehensibility. For the main sectors (n=100), there will also be robust estimates.

## 4. Translations

Language is key to effective hazard communication. Although the instrument seeks to take account as far as possible of language differences, poor and unstandardised translation may introduce considerable error into the testing. For this reason, careful attention needs to be paid to accurate translation. We recommend the following procedure to be followed:

- Two persons fluent in English (the language of the current instrument) independently translate the questionnaire into the index language (the language of the target group).
- Both translations are then translated back into English by a further pair of translators independent of each other and of the original translators.

Back-translations should aim to achieve less than 5% errors on first round. Clarification of the errors in the translation should be conducted to correct ambiguities. Where possible, a combined translation should try to include all elements correctly translated and back translated from either questionnaire.

If the latter is not possible, the translation with the lower rate of errors should be taken as the translation of preference. A second round of back translation will be necessary if errors exceed 5%.

## 5. Timing of Interviews

Interviews and focus groups must be set up at a convenient time for both the interviewee and their employer (when this applies). Farm workers should not be requested to attend an interview during a crucial and busy period for farmers (e.g., planting, ploughing, spraying, or harvest). Workers should be interviewed during working time and should not suffer financial loss for their participation. It is not recommended that workers participate in their own time (lunch or after hours) without adequate compensation. If workers agree to participate during lunch break, the time must be adequate and suitable recompense provided (time back, lunch provided, etc).

Table 5.1 gives the estimated time needed for completion of individual modules based on preliminary piloting. Testing times will be prolonged with non-literate participants.

Module	Time (minutes)
2	5
3	15
4	5
5	10
7	5
8	10
10	10
11	120 – 180

## 6. Rating and Coding of responses

Rating of responses to comprehensibility testing requires expert judgement as to the correctness of the response. Previous experience in Zambia and Zimbabwe has shown that content analysis of open-ended responses may be feasible where observers are carefully standardised in their approach.

Coding categories will include:

- **Correct:** Meaning is identical, or fully consistent with intention of the GHS construct. This includes responses which are not 100% the same as the GHS meaning but would suffice as the basis for a safety action or precaution.
- **Partly correct:** Some element of the meaning is correct but it would be insufficient to ensure adequate safety action or precaution.
- **Incorrect:** Meaning given is either completely wrong, or has very poor relation to the GHS intended meaning.
- **Critical confusions:** Meaning given is not only incorrect but indicates an understanding opposite of the intention of the GHS system. Such a critical confusion may result in a dangerous behaviour or action.
- **Cannot answer / doesn't know**

## 7. Analyses

Analyses proposed for these modules are simple computations of proportions and means in relation to different strata. An overall estimate for comprehensibility will be adjusted for weightings by stratum and by other demographic factors known to affect comprehensibility.

## **8. Feedback and Follow up**

All subjects should be offered the opportunity of seeing the final results of the comprehensibility evaluations, and to give feedback on the interview and testing procedures

## **9. Follow up evaluation**

Subjects participating in these evaluations should be re-interviewed after 1 year to assess retention and long-term benefits of exposure to the GHS hazard messages. Depending on resources and logistics, it may be possible to avoid re-testing on all the modules completed at baseline.

## **10. Description of Modules and Tools Used in the South African Study**

In the next section, each module tested is presented in terms of its objectives, design, outcome, approximate duration of testing and which participants the module is targeted for. At the end of each module, a list of labels and SDS needed for that module is provided.

## 10.1 Module 2: General Interview

### **Objectives**

The aim of the general questionnaire is to ascertain demographic and other data that will be a basis for further analysis of comprehensibility questionnaires. The general questionnaire also clarifies competence in colour and visual acuity necessary for some of the subsequent tests. Data on work experience, critical to interpretation of comprehensibility assessments are also sought here.

### **Sequence of modules**

All subjects must complete this questionnaire. The questionnaire is the same one for **all sectors**.

### **Design**

Descriptive data collection to inform analyses of subsequent modules.

**Approximate Duration:** .5min

**Participants:** All subjects complete this module; One stratum.

**No labels or SDS's are required for this module**

## 10.2      **Module 3: Recall, reading and comprehensibility of labels and SDS's**

### **Objectives**

1. To evaluate subjects' familiarity with a label and a SDS
2. To test subjects' recall of label elements
3. To test the comprehensibility of the following elements in a label:
  - signal words
  - Symbols
4. To assess the comprehensibility of hazard statements in terms of:
  - How they are understood
  - How well they are thought to be understood by others
  - Identifying technical words that are difficult to understand
  - Understanding of ambiguous qualifiers and adjectives
5. To assess the impact of the label on the subjects':
  - Ranking of hazard, both to self and to a child
6. To assess whether subjects can correctly identify the appropriate Safety Data Sheet (SDS) for a given chemical label.
7. To assess whether subjects can identify information on chemical name, health hazard, physical hazard and use of protective clothing from a label, and whether this information is correctly identified.
8. To assess whether subjects can identify information contained only on the SDS (in this case for spillage and storage) from the SDS, and whether this information is correctly identified.

### Outcome

1. Identify prior familiarity with labels and SDS's amongst target groups
2. By comparing recall, sequence of reading and comprehensibility of label elements across subjects given different labels, the impact of different label fonts can be assessed.
3. Poorly understood elements of hazard statements can be identified. By comparing responses of subjects to labels with hazard statements of different structures, statements with highest comprehensibility can be identified.
4. Hazard ranking, and intention to use and store the chemical will be assessed both before and after discussion of comprehensibility. Paying attention to detailed elements of comprehension may of itself change subjects' perceptions of hazard. Comparison of results obtained before and after will enable evaluation of this effect. These results will also be compared to a similar evaluation of a brief training intervention contained in a later module. In this way, the impact of the Hawthorne effect can be gauged.
5. Comparison of whether ranking of hazard to self differs from ranking of hazard to a close relative.
6. Identifying whether subjects can link data from a label to an appropriate SDS in a meaningful way.

### Design

- Within subject description of label and SDS comprehension
- Between subject comparison of impact of signal word comprehension: comparison of subjects receiving different labels 3.1 and 3.2
- Within subject description of ability to link label to SDS.

**Note** different (parallel) labels for consumers versus other. Modules adapted accordingly.

**Approximate Duration:** 15min

**Participants:** All subjects complete this module; comparisons by 2 strata.

### Labels and SDS's / inserts required for Module 3.

Label 3.1	Label for Saloc = Signal word Danger
Label 3.2	Label for Bayetone = Signal word Warning
SDS 3.1	SDS for Bayetone = Acetone
SDS 3.2	SDS for n-Heptane
SDS 3.3	SDS for Phenyl Isocyanate

## 10.3 Module 4: Rating and Understanding of Hazards: Signal Words Colours and Symbols

### Objectives

1. To test subjects' ranking for severity of hazard for:
  - Signal words
  - colours
  - symbols
2. To test whether subjects' perception of the label will influence their reported intention to use the chemical
3. To explore subjects' views as to what hazard elements on labels mean.

### Outcome:

1. Elements to hazard on labels will be rated for ability to denote level of hazard: Colours and Symbols. Rankings will be established for colours.
2. Comprehension of elements on labels will be assessed for all elements separately.

**Approximate Duration:** .5min

**Participants:** All subjects complete this module; One stratum.

**Note** different (parallel) labels for consumers versus other. Modules adapted accordingly

### Labels required for Module 4.

Label 4.1	Label for Korbone=Signal word danger in red next to skull and crossbones icon with environmental hazard icon & flammable sign
Label 4.2	Label for Saloc = Signal word danger in green next to skull and crossbones icon with environmental hazard icon & flammable sign
Label 4.3	Label for bayetone=Signal word danger in yellow next to skull and crossbones icon with environmental hazard icon & flammable sign
Label 4.4	Label for Gordone=Signal word danger in blue next to skull and crossbones icon with environmental hazard icon & flammable sign.
Label 4.5	Label for Lanim=Signal word danger away from Skull and crossbones icon with icons acute hazard and corrosive next to it
Label 4.6	Label for Lanim= Signal word danger away from skull and crossbones icon with skin irritant icon and reproductive hazard icon next to it
Label 4.7	Label for Surman =Signal word danger away from skull and crossbones icon with icons explosive and oxidising next to it
Label 4.8	Label for Saloc= Signal word away from skull and crossbones with icons carcinogenic and compressed gas next to it
Label 4.9	Label for Saloc=Signal word danger away from skull and crossbones with icon environmental hazard and flammable next to it.
Label 4.10	Label Bayetone=Signal word warning next to skull and crossbones with environmental and flammable icon next to it

## 10.4 Module 5: Comprehension of hazard symbols with and without text

### Objectives

1. To test subjects' understanding of symbols representing hazard classes.
2. To test subjects' understanding of concepts of hazard classes.

### Outcome:

1. Subject's ability to identify the correct symbol for a hazard class will provide a measure of subjects' understanding of hazard class symbols.
2. Identification of incorrect symbols for a hazard class will provide information on hazard classes for which symbols perform poorly.
3. Association of incorrect hazard class with a particular symbol will give an indication of which symbols perform poorly as indicators of a hazard class.
4. Symbols that have ambiguous interpretations may also be identified.

**Design:** Within subject comparisons: All subjects receive all labels for rating

**Approximate Duration:** 10min

**Participants:** All subjects complete this module; one stratum.

**Note** different (parallel) labels for consumers versus other. Modules adapted accordingly.

### Labels required for Module 5:

Label 5.1	Label Surman= signal word danger away from skull and crossbone icon with skin irritant and explosive next to it
Label 5.2	Label Grayde= signal word danger away from skull and crossbon icon with carcinogenic and oxidizing icon next to it
Label 5.3	Label Eclipse=signal word danger word away from skull and crossbones with reproductive and flammable icon next to it
Label 5.4	Label Zenith=signal word danger word away from skull and crossbones with compressed gas, corrosive and environmental hazard next to it

## 10.5 Module 7: Pictogram Comprehension

### Objectives

1. To test subjects' understanding of the pictograms used on labels

### Outcome:

1. Comprehensibility of pictograms: understanding, ranking of hazard, attention, access to key information

### Design:

Descriptive analysis. Note: There are 2 different module 7's – one for transport and industry and one for agriculture and consumers. These modules use different labels, appropriate to the sectors concerned. Although two labels (7.1 and 7.2) are provided to each subject, there is no comparison intended between labels. The purpose of having 2 labels is solely to ensure that all the advisory pictograms can be contained in the full spectrum of labels and all can be subjected to comprehensibility testing.

**Approximate Duration:** 10min

**Participants:** All subjects complete this module although different modules by sector; no comparisons.

**Note** different (parallel) labels for consumers and agricultural workers versus industry and transport workers. Modules adapted accordingly.

### Labels required for Module 7

Label 7.1	Label Endluis with signal word danger away from the pesticides icons in yellow.
Label 7.2	Label Zeet with signal word danger away from skull and crossbones but next to pesticides icons in red.

**Note: Same labels used for Consumer/Agriculture and Industry/Transport**

## 10.6 Module 8: Comprehensibility of Safety Data Sheets (SDS's)

### Objectives

1. To test subjects' ability to identify safety information from a SDS.
2. To test the subjects' understanding of hazard information on a SDS.
3. To evaluate what the subject reads on a SDS
4. To assess what information on the SDS the subject finds useful, appropriate and understandable.
5. To assess whether SDS information is related to intention to behave safely.

### Outcome

1. Comprehension of SDS hazard information will be assessed from different aspects: 1) interpretation of health hazard information; 2) Self-assessment of understandability to others; 3) scoring of how the subject explains a hazard statement to a third party. Agreement between these three measures of understanding will be estimated. Data from this section of the Module will complement sections in Module 3 on the comprehensibility of hazard statements.
2. The extent to which subjects read different parts (under each sub-heading) of the SDS will be assessed. Variables calculated will be the proportion of subjects reading each sub-element of the SDS, and an index for the element read most frequently.
3. Subjective assessment of the usefulness and appropriateness of sub-elements will be useful to identify areas for further review of SDS development.
4. Reported intention to behave will be related to other elements of SDS information comprehensibility.

### Design:

Between subject comparison. Each subject is given an SDS.

**Approximate Duration:** 10min

**Participants:** All subjects complete this module.

**Note:** No SDS testing of consumers

### Labels and SDS's / inserts required for Module 8

Label	No labels used
SDS 8.1 (=same as SDS 3.1)	Bayetone=acetone

## 10.7 Module 10 - Post Interview

### Objectives

1. To ascertain subjects' past history of contact with chemicals and whether they have had any training in safety regarding chemicals.
2. To test the effect of a brief explanation of symbols, signal words, colours and hazard statements on a label on subjects' ranking for severity of hazard, and comprehension.
3. To identify chemical information needs from subjects.

### Outcome:

1. Subject's ability to comprehend hazard communication messages will be greatly influenced by their past experience of, and exposure to chemicals and training in chemical safety. Variables on which to stratify responses to earlier modules will be derived in this module.
2. The effect of a brief and directed explanation on comprehension and hazard rating of label elements will be tested. Results will help to indicate whether training should be the subject of more detailed evaluation in the long term.
3. Responses to questions on needs for chemical information can be useful to GHS efforts on chemical safety.

### Design

Descriptive data collection to inform analyses of preceding modules. Comparison within subject to answers to module 3 will evaluate effect of the whole testing procedure. Randomisation of subjects (half receive training and half do not) within Module 10 to explanation versus no explanation will enable evaluation of the effect of "brief training" through between subject comparisons.

**Approximate Duration:** 10min

**Participants:** All subjects complete this module; comparisons by two strata (effect of training).

**Note** different (parallel) labels for consumers and agricultural workers versus industry and transport workers. Modules adapted accordingly.

### Labels required for Module 10

Label 10.1	Label for Zampac with signal word danger away from the skull and crossbones icon. The skull and crossbones are surrounded by the icons oxidising+ environmental hazard+ explosive+flammable, chronic+acute + corrosive for training; + non training
------------	---

## 10.8

## Module 11: Group Exercise - Comprehension

**Objectives:**

1. To test whether learning about hazard communication happens differently in a group context than with individuals.
2. To test whether subjects working as a group come up with significantly different answers than when individual subjects are asked a questionnaire.

**Outcome:**

1. A quality control assessment on the affect of group versus individual learning of hazard communication tools.
2. Groups coming up with significantly different responses from individuals indicates that the testing model needs to be revised in way the questions are being asked.
3. Implications for how training should be addressed in future as an element of hazard communication

**Approximate Duration:** 2 to 3 hours

**Participants:** Groups of workers between 6 and 10 in size. Collective agreement is sought and recorded. Comparisons of outcomes to the kind of results found with individual interviews.

**Note:** Same labels used for Consumer/Agriculture and Industry/Transport

## 11. Experimental Tools

The table below lists the testing labels used for the testing modules.

<b>Table 11.1 Experimental Tools: Labels and Safety Data Sheets (SDSs) for Testing Modules</b>		
<b>Tool</b>	<b>Contains</b>	<b>Module</b>
Label 3.1	Complete label for Saloc = Acetone font arial	3
Label 3.2	Complete label for Bayetone = Acetone font times new roman	3
SDS 3.1	SDS for Bayetone = Acetone	3
SDS 3.2	SDS for Heptane	3
SDS 3.3	SDS for Phehyl Isocyanate	3
Label 4.1	Red	4
Label 4.2	Green	4
Label 4.3	Yellow	4
Label 4.4	Blue	4
Label 4.5	Danger identify symbols acute + corrosive	4
Label 4.6	Danger identify symbols skin irritant + reproductive effect	4
Label 4.7	Danger identify symbols explosive + oxidising	4
Label 4.8	Danger identify symbols carcinogen + compressed gas	4
Label 4.9	Identify meaning danger	4
Label 4.10	Identify meaning warning	4
Label 5.1	Skull and crossbones +skin irritant + explosive	5
Label 5.2	Skull and crossbones +Carcinogen + oxidising	5
Label 5.3	Skull and crossbones +Reproductive + Flammable	5
Label 5.4	Skull and crossbones + compressed gas+Corrosive to metal and skin + environmental hazard	5
Label 7.1	Pesticide label 1 Endilius	7
Label 7.2	Pesticide label 2 Zeet	7
SDS 8.1	SDS Bayetone and Saloc - Health hazard information under Regulatory Information (Header 15)	8
Label 10.1	Zampac: Skull/Xbones; danger +oxidizing + environmental hazard + flammable +explosive +chronic+ acute +corrosive signs	10

## Annexure 1: Acknowledgments

The following organisations/institutions/individuals are acknowledged for their contribution to this report:

- The manual is based with permission on a Hazard Communication Testing Methodology developed by the Occupational and Environmental Health Research Unit at the University of Cape Town for the International Labour Office to support the implementation of the Global Hazard Communication System (GHS).
- The authors of this manual include: Professor L London, Ms A Rother, Ms S Tolosana, and Ms M Maruping.
- Assistance in editing was obtained from Mr M Mzilikazi, Ms S Brinkhuis and Ms S Miller.

## **Annexure 2: Modules**

### **CONTENTS:**

Testing Module Agriculture No Training

Testing Module Agriculture with Training

Testing Module Industry No Training

Testing Module Industry with Training

Testing Module Transport with Training

Testing Module Transport No Training

**GHS Testing**  
**Module Agriculture**  
**No Training**

## MODULE 2: GENERAL INTERVIEW (Industry, Transport, Agriculture)

**Sector:** Industry =1  
 Transport =2  
 Agriculture =3  
 Consumer =4

**Interviewer Code:**

**Date:** (dd/mm/yy)

**Study Number:**

**1. Place of Interview :** Western Cape =1  
 Gauteng =2

**2. Place of Interview:** (City/Town)

**3. Place of Interview:** (Name of Industry/Shop/  
 Farm etc):

### 2.1 CONSENT PROCEDURE

**CONSENT:** Consent for participating is sought individually with each participant.

- *Good morning/afternoon.*
- *My name is interviewers name ..... I work for the University of Cape Town*
- *Thank you for agreeing to speak to me. I would like you to help us with a safety project.*
- *I will be asking you some questions, as well as showing you some papers. Your answers will be very helpful for us to advise how workplaces and homes can be made safer.*
- *Even though we will be asking you a lot of questions, **this is not a test of your ability or knowledge. You will not be judged by how well or poorly you answer any questions.** We are testing the information we will be showing you and not your ability. All we ask is that you try to answer the questions as truthfully and as best as you can.*



**LANGUAGE**

**INTERVIEWER FILLS IN:**

**2.3.1** Language interview is conducted in: \_\_\_\_\_



**2.3.2** *What language/s do you speak at home?* : \_\_\_\_\_

--	--

- |                |           |
|----------------|-----------|
| 1= English     | 4= Zulu   |
| 2= Xhosa       | 5= Tswana |
| 3= Afrikaans   | 6= Sotho  |
| 7= Other _____ |           |

**2.3.3** Language proficiency

**INSTRUCTION:**  
Code: Proficient = 1; Partly Proficient = 2; Unable to speak/  
read/write = 3

<i>Please tell me if you can ...</i>	<b>Read</b>	<b>Write</b>	<b>Speak</b>
<b>Language of the interview</b>			
<b>Afrikaans</b>			
<b>English</b>			

**2.4 EDUCATIONAL STATUS**

**2.4.1 Have you attended school?**

**Yes =1 No =2**

**2.4.2 How much schooling have you completed?** (Fill in appropriate number)

- no formal schooling = 1
- formal schooling but never completed primary school = 2
- formal schooling, completed primary school but never completed secondary/high school = 3
- completed secondary/high school = 4

**2.4.3 Did you receive any training, skills or further education after school?**

**Yes =1 No =2**

**2.4.3.1 If yes, specify:** (Tick the appropriate box)

Have a diploma in a trained skill/vocation

**Yes =1 No =2**

Completed university, college of technical degree

**Yes =1 No =2**

Other (Specify): \_\_\_\_\_

**2.4.3.2 What is your occupation?**

\_\_\_\_\_

**2.5 EMPLOYMENT DETAILS**

**2.5.1 Are you employed?**

Yes =1 No =2

If **YES** go to 2.5.3

**2.5.2 What do you do for a living?**

-----  
-----  
-----

**2.5.3 What is your current job title or occupation?**

-----

**2.5.4 Please describe what you do in your current job?**

-----  
-----

**2.5.5 What type of industry do you work in?**

-----

**6 WORK EXPERIENCE**

**2.6.1 Have you ever used or worked with the following? Yes =1 No =2**

Vibrating tools (eg. Drill, jackhammer) .....	<input type="checkbox"/>
Hot water .....	<input type="checkbox"/>
Electrical Equipment .....	<input type="checkbox"/>
Chemicals .....	<input type="checkbox"/>
Heavy vehicles (e.g. trucks, tractor, forklift, crane) .....	<input type="checkbox"/>

**2.6.2 How would you find out about the hazards of a chemical you were working with? (Tick the appropriate box – first unprompted, then prompt)**

**FILL IN Yes =1, No =2, DK =3**

**Key: DK = don't know**

<b>Unprompted</b>	<b>Code</b>	<b>Prompted</b>	<b>Code</b>
Label		Label	
SDS		SDS	
Co-workers		Co-workers	
Supervisors		Supervisors	
Training		Go for Training	
Occupational Health personnel		Occupational Health Personnel	
Other specialist personnel		Other specialist Personnel	
Trade Union office		Trade Union office	
Public information service (e.g. Poison Centre)		Public information service (e.g. Poison Centre)	
Other: (Specify)_____		Other: (Specify)_____	

**2.6.3 If you use a chemical at work, what kind of information do you feel there should be on the chemical containers to protect your own health and safety?**

-----

-----

2.7 ACUITY AND COLOUR BLINDNESS



**INTERVIEWER:**  
➤ For colour blindness tests: use Ishihara plates (Question 2.7.1)  
➤ For visual acuity tests: use Snellem's E (Question 2.7.2).

**2.7.1 Test for Colour Blindness**

*Some people have difficulty seeing certain colours, although this does not cause problems for the person, this may be a problem when colour is used on products. We would now like to test you for colour blindness.*

Respondent sees 8 + 29 = not colour blind	Tick NO
Respondent sees 3 + 70 = colour blind)	Tick YES

2.7.1.1. Is the respondent colour blind? Yes =1 No =2

**2.7.2 Test for Visual Acuity**

3.7.2.1 Is the respondent wearing glasses Yes =1 No =2

2.7.2.2 Do you usually wear spectacles/glasses? Yes =1 No =2

<i>We would also like to see how well you see from a distance</i>	
Can see at distance 6/12	Tick YES
Cannot see at distance 6/12	Tick NO

2.7.2.1 Does the respondent have adequate visual acuity (i.e., 6/12)? Yes =1 No =2

- Thank you very much for your effort.
- We will now proceed with the next set of questions.

**End of Module 2**

## MODULE 3: RECALL, READING AND COMPREHENSIBILITY OF LABELS

(For Transport, Industry and Agriculture Sectors)

### BE SURE TO HAVE THE FOLLOWING BEFORE STARTING:

- ⇒ Stopwatch
- ⇒ Label                      SALOC (danger) =1    BAYETONE (Warning) = 2
- ⇒ Container

- **INSTRUCTION:**
- **Randomly select a label**
- **Time for 60s and take label back**

### 3.0 LABEL USED:

Label 3.1	<b>SALOC (Danger)</b>	<b>= 1</b>
Label 3.2	<b>BAYETONE (Warning)</b>	<b>= 2</b>



### 3.1 ATTENTION TO LABEL

- *I am going to ask you some questions.*
- *If you do not understand some of the words I use, I will explain them to you.*
- *Please do not be shy to ask me to explain the question to you.*
- *Please have a look at this. I am going to give you some time to look at this and I will ask you some questions about this*

### INTERVIEWER FILLS IN: Time subject:

The respondent is allowed to look at the label for 60 seconds.

3.1.1	If subject looks at the label for 60s	=1
3.1.2	If subject stops looking at the label before 60s	=2



### 3.2 FAMILIARITY WITH THE LABEL

### 3.2.1 *Have you ever seen this before?*

*(Point to the label) Tick the correct box*

Yes =1	No =2	Not sure =3
--------	-------	-------------

- *NB: If “YES”, GO TO 3.2.2*
- *NB: If “NO” ... EXPLAIN THAT THIS IS A LABEL  
(Do not ask 3.2.2)*

### 3.2.2 *What do you call this?* (Point to the label)

Label =1	Other name =2	Don't know =3
----------	---------------	---------------

- *NB: TAKE BACK THE LABEL*

## 3.3 RECALL

### **INSTRUCTION:**




- Ask respondent what they can remember on the label - DO NOT PROMPT
- After you mark what they remember under “without prompts” then proceed to ask if they remembered the items not mentioned under “prompted”.
- Put answers on Table 3.3.

**3.3.1 *What do you remember was on the label?*** [Tick appropriate box in Table 3.3 under “Unprompted” – 3.3.1]

**3.3.2 *Do you remember any of the following on the label?*** [Tick appropriate box in Table 3.3 under “Prompted” – 3.3.2]

3.3.1 3.3.2

Table 3.3

		Without prompts Code=1	Prompted Yes =1 No =2
<b>Identifier</b>	1. BAYETONE/SALOC		
	2. Other (specify)		
<b>Symbols</b>	3. 		
	4. 		
	5. 		
	6. Other (specify)		
<b>Signal Word</b>	7. DANGEROUS / WARNING		
	8. Other (specify)		
<b>Statement</b>	9 Hazard Information		
	10. Active Ingredient Acetone		
	11. Quart: 32 Fl.Oz		
	12. Harmful or fatal if swallowed		
	13. Work in adequate ventilation		
	14. Avoid prolonged or repeated breathing of vapour		
	15. Causes skin and eye irritation		
16. May cause reproductive effects			

	17. In case of emergency call 021-93346887		
	18. Wear eye protection, suitable gloves and apron when handling this chemical		
	19. Protect from freezing		
<b>First Aid &amp; Treatment</b>	20. In case of contact, immediately flush eyes or skin with water		
	21. Remove contaminated clothing and shoes		
	22. Remove to fresh air		
	23. If not breathing, give artificial respiration		
	24. If swallowed, do not induce vomiting		
	25. If conscious, give large amounts of water		
	26. Causes skin and eye irritation		
	27. If breathing is difficult, give oxygen		
	28. If not breathing, give artificial respiration		
	29. Empty, uncleaned drums can still be DANGEROUS		
	30. Keep labeled until decontaminated, only then remove label		
	31. IN CASE OF EMERGENCY		
	32. Call appropriate Emergency Services		
	33. Other (specify)		

**INSTRUCTION:** Return the label to the subject




➤ Thank you. Here is the label again.

### 3.4 SEQUENCE OF READING

**3.4.1 Can you remember what you looked at first when I first gave you the label?** [Write answer In Table 3.4 below]

- **What did you look at next?** (Keep asking until they can't remember any more)

**Table 3.4**

		Code
<b>Identifier</b>	1. BAYETONE/SALOC	
<b>Symbols</b>	3. 	
	4. 	
	5. 	
<b>Signal Word</b>	7. DANGEROUS / WARNING	
<b>Statement</b>	9 Hazard Information	
	10. Active Ingredient Acetone	
	11. Quart: 32 Fl.Oz	
	12. Harmful or fatal if swallowed	
	13. Work in adequate ventilation	
	14. Avoid prolonged or repeated breathing of vapour	
	15. Causes skin and eye irritation	
	16. May cause reproductive effects	
17. In case of emergency call 021-93346887		

	18. Wear eye protection, suitable gloves and apron when handling this chemical	
	19. Protect from freezing	
<b>First Aid &amp; Treatment</b>	20. In case of contact, immediately flush eyes or skin with water	
	21. Remove contaminated clothing and shoes	
	22. Remove to fresh air	
	23. If not breathing, give artificial respiration	
	24. If swallowed, do not induce vomiting	
	25. If conscious, give large amounts of water	
	26. Causes skin and eye irritation	
	27. If breathing is difficult, give oxygen	
	28. If not breathing, give artificial respiration	
	29. Empty, uncleaned drums can still be DANGEROUS	
	30. Keep labeled until decontaminated, only then remove label	
	31. IN CASE OF EMERGENCY	
	32. Call appropriate Emergency Services	

### 3.5 PERCEPTION OF DANGER

**INSTRUCTION:**

- *Explain to subject: "I would like you to answer the next question on a scale from 1 to 3"*
- *Explain or write on a piece of paper the following rating scale for the respondent to use:*

1 = not dangerous at all

2 = dangerous

3 = very dangerous

**3.5.1** *On a scale of 1 (not dangerous at all) to 3 (very dangerous), how dangerous do you feel this product is?*

Ring the appropriate number

1	2	3
---	---	---

**3.5.2** *Why do you say so?*

-----  
-----  
-----

--	--

**3.5.3** *On a scale of 1 (not dangerous at all) to 3 (most dangerous), how dangerous do you feel this product/chemical is for a child?*

Ring the appropriate number

1	2	3
---	---	---

### 3.6 COMPREHENSION OF LABEL ELEMENT

#### 3.6.1 I am now going to point out different elements on this label.




- I will need you to please tell me what you think these elements mean to you and
- Then I would like you to tell me whether you think other consumers will understand this symbol.

**INSTRUCTION:**

- ⇒ Point to the element in the label, as indicated on chart below
- ⇒ Fill in the meaning of the symbol exactly as the subject describes it.
- ⇒ Then fill in how the subject believes consumers will understand the hazard statement

**FOR OFFICE USE ONLY**

**Correct =1**                      **Partially Correct =2**  
**Incorrect =3**                      **Critical Confusion =4**  
**Don't know = 5**

Point to Element	Meaning <i>What does this symbol mean to you?</i>	<i>Do you think other consumers will understand this symbol?</i> Yes =1 No =2 DK= 3
	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>
Signal word: <b>DANGER / WARNING</b>	<input type="text"/>	<input type="text"/>

### 3.7 DANGER / WARNING STATEMENTS

- Please look at the section of label that says "Hazard Information."
- Please read (or I will read to you) the information listed under "Hazard Information."

➤

**3.7.1 Are there any words in these sentences that you don't understand?**

Yes=1 No=2

If **NO** go to Question 3.7.2

**3.7.1.1 If "YES", please tick the words you don't understand.**

Word	Don't understand Code=1
Adequate	
Artificial respiration	
Barrier cream	
Contaminated	
Conscious	
Copious	
Flammable	
Flush	
Fl Oz	
Induce	
Ingestion	

Word	Don't understand Code=1
Immediately	
Inhalation	
Oxygen	
Protect	
Quart	
Treatment	
Inhalation	
Vapour	
Ventilation	

Look at the phrase "**Work in conditions of adequate ventilation.**"

**3.7.2** What are conditions of adequate ventilation?

-----

—

**INSTRUCTION:** If subject struggles to understand what you mean, explain that you want to know what would be a good working environment to make sure the person doesn't breathe in too much of the chemical.

Look at the phrase "**Avoid prolonged or repeated breathing of vapour.**"

**3.7.3 How long is "prolonged"?** (Ask subject to give a time period)

1. minutes	
2. hours	
3. days	
4. weeks	
5. months	



**3.7.3.1 How many times is 'repeated' breathing of the vapour?**

**INSTRUCTION:** If respondent is having difficulty in answering the above question. Ask "*How many times is it dangerous to breathe the vapour?*"

Length of Time	Code = 1
1. 1 time	
2. 2-5 times	
3. 6-10 times	
4. 11-20 times	
5. 20-50 times	
6. Indefinite	
7. Other – specify	



- *I am now going to read out different hazard statements found on this label.*
  - *I will need you to please tell me what you think these phrases mean and*
  - *then I would like you to tell me whether you think others/other workers will understand this phrase.*

**INSTRUCTION:**

- ⇒ Read out to the subject the hazard statement from the label, as indicated on chart below
- ⇒ Fill in the meaning of the hazard statement as the subject describes it
- ⇒ Fill in how the subject believes other consumer will understand the hazard statement

**OFFICE USE ONLY**

**Correct** = 1  
**Partially Correct** = 2  
**Incorrect** = 3  
**Critical Confusion** = 4

**Meaning of hazard statement**

<b>Hazard Statement</b>	<b>Meaning</b> <i>What does this phrase mean to you?</i>	<i>Will other consumers understand this phrase?</i> Yes =1 No =2 DK = 3
Work in conditions of adequate ventilation	<input type="text"/>	
Do not induce vomiting	<input type="text"/>	
In case of contact, immediately flush eyes or skin with copious amounts of water	<input type="text"/>	
If not breathing give artificial respiration	<input type="text"/>	
If breathing is difficult, give oxygen	<input type="text"/>	

### 3.8 FAMILIARITY WITH THE LABEL (II)

Tick the correct box

#### 3.8.1 How many times have you read any label in the last year?

Never	=1
A few times (<10)	=2
Many times/ regularly (>10)	=3

IF "NEVER" GO TO 3.9

#### 3.8.1 How many times in the last year have you used any information on a label ?

Tick the correct box

Never=1
A few times (<10) =2
Many times/ regularly (>10) =3

#### 3.8.3 Can you remember the last time you used the information on a label?

#### 3.8.4 If YES, what did you used it for?

-----  
-  
-----  
-  
-----  
-

- *Thank you very much for your effort.*
- *Please pass me back the label*

### 3.9 LABELS AND SAFETY DATA SHEETS

**INSTRUCTION:**

- Give the subject label 3.1 or 3.2
- Safety Data Sheets 3.1 to 3.4

➤ Here is another label and some other documents.

**3.9.1 Have you ever seen this before?**  
(Point to the SDS)?

Tick the correct box

Yes=1	No=2	Not sure=3
-------	------	------------

**3.9.2 Do you know what this document is called?**  
(Point to the SDS)?

SDS=1	Other Name=2	DK=3
-------	--------------	------

➤ NB: If the answer is “**NO**”, tell the person “**This is called a safety data sheet.**” Do NOT ask 3.9.3.

**INSTRUCTION:**

- If cannot read at all, go to Module 4

**3.9.3 How many times have you read a Safety Data Sheet in the last year?**

Tick the correct box

Never=1
A few times (< 10) =2
Many times regularly (>10) =3

**3.9.4 How many times have you used the information on a Safety Data Sheet in the last year?**

Never=1
A few times (< 10) =2
Many times regularly (>10) =3

**INSTRUCTION:** If the answer is ‘NEVER’ go to 3.9.6

**3.9.5** *When you last used the information on a SDS, what did you use it for?*

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**3.9.6** *Who do you think is supposed to use the information found on such a document? Explain*

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- *Here are 4 chemical safety data sheets (SDS's) for you to use.*
- *A Safety Data Sheet contains detailed information on a chemical.*
- *One of these Safety Data Sheets contains information on the same chemical on the label.*

*Have a look at the label.*

### **3.10 LOCATING INFORMATION**

**3.10.1** *What is the trade name of the chemical on the label?*

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**INSTRUCTION:**

**If the subject is unable to understand the difference between a trade name and an active ingredient, specify as below:**

*Many companies may produce this chemical. Each company will give the chemical their own name. This name we call a Trade Name. But even though they give different names to what they produce, the actual chemical is the same. The name of the actual chemical we call the chemical name, that is, the active chemical ingredient.*

<b>INTERVIEWER FILLS IN:</b> Requires explanation	Yes =1	No=2

**3.10.2 What is the active chemical ingredient in Saloc?**

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**3.10.3 What health hazards are associated with this chemical? (you may tick more than one)**

Code=1

<i>Irritation of respiratory tract</i>	
<i>Coughing, dizziness, dullness, headache</i>	
<i>CNS depression, narcosis, unconsciousness</i>	
<i>Abdominal pain, nausea, vomiting</i>	
<i>Severe lung damage</i>	
<i>Redness, pain, drying and cracking of skin</i>	
<i>Eye irritation, stinging, tearing, redness and pain</i>	
<i>Severe irritation or dermatitis</i>	
<i>Alcohol aggravates toxic effect</i>	
<i>Other</i>	

Tick if:

Used Label	Used SDS
Yes = 1	Correct = 1
No = 2	Inccorect=2
	Didn't use=3



Label

SDS

**3.10.4 What physical hazards are caused by this chemical? (you may tick more than one)**

Code=1

<i>Fire - extremely flammable liquid and vapour</i>	
<i>Flash-fire - vapour may ignite</i>	
<i>Other</i>	

Label

Tick if:

Used Label	Used SDS
Yes = 1	Correct = 1
No = 2	Inccorect=2
	Didn't use=3

**3.10.4 What must you do if there is a spillage of this chemical? (you may tick more than one)**

Code=1

<i>Ventilate area of leak</i>	
<i>Remove all sources of ignition</i>	
<i>Wear personal protective equipment</i>	
<i>Isolate hazard area</i>	
<i>Keep unnecessary/unprotected personnel from entering</i>	
<i>Contain and recover liquid when possible</i>	
<i>Use non-sparking tools and equipment</i>	
<i>Collect liquid in appropriate container or absorb with inert material</i>	
<i>Place in chemical waste container</i>	
<i>Do not use combustible materials</i>	
<i>Do not flush to sewer</i>	
<i>If no fire, use water spray to disperse vapours/protect personnel/flush spills</i>	
<i>Solvent adsorbent should be used</i>	
<i>Other</i>	

Tick if:

Used Label	Used SDS
Yes = 1	Correct = 1
No = 2	Inccorect=2
	Didn't use=3

Label

SDS

**3.10.6 What protective clothing should you wear with this chemical? (you may tick more than one)**

Code=1

<i>If exposure limit is exceeded – half-face organic vapour respirator</i>	
<i>Emergencies – full-face organic vapour respirator</i>	
<i>Emergencies/levels not known – full-face positive-pressure, air-supplied respirator</i>	
<i>Impervious protective clothing – boots, gloves, lab coat, apron or coveralls to prevent skin contact</i>	
<i>Chemical safety goggles and/or full-face shield where splashing</i>	

<i>could occur</i>	
<i>Maintain eye wash fountain and quick-drench facilities in work area</i>	
<i>Other</i>	

Tick if:

Used Label	Used SDS
Yes = 1	Correct = 1
No = 2	Inccorect=2
	Didn't use=3



Label

SDS

**3.10.7 How should this chemical be stored? (you may tick more than one)**

Code=1

<i>Protect against physical damage</i>	
<i>Store in cool, dry, well-ventilated location away from fire hazard</i>	
<i>Outside and detached storage preferable</i>	
<i>Separate from incompatibles</i>	
<i>Containers bonded and grounded for transfers to avoid static sparks</i>	
<i>Store in No Smoking areas</i>	
<i>Use non-sparking tools and equipment and explosion-proof ventilation</i>	
<i>Empty containers may be hazardous</i>	
<i>Observe all warnings and precautions listed for this product</i>	
<i>Other</i>	

Tick if:

Used Label	Used SDS
Yes = 1	Correct = 1
No = 2	Inccorect=2
	Didn't use=3



Label

SDS

**INSTRUCTION:**

- Take back the label.
- This is the end of the Module

- Thank you very much for your effort.
- Would you like a break now?