

# Challenges with CLP and solutions offered by AkzoNobel

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## Agenda

- Introduction to CLP
- Challenges with CLP
- How can AkzoNobel help?
  - CESIO
  - BCOP tests
  - A.I.S.E in vitro program
  - Guideline formulations

## CLP 2015: Introduction

**CLP** stands for **C**lassification, **L**abelling and **P**ackaging

The CLP regulation aligns existing EU legislation to the UN **G**lobally **H**armonised **S**ystem of Classification and Labelling of Chemicals (**GHS**).





1 December 2010: substances must be classified, labelled and packaged under CLP.

1 June 2015: mixtures must be classified, labelled and packaged under CLP.



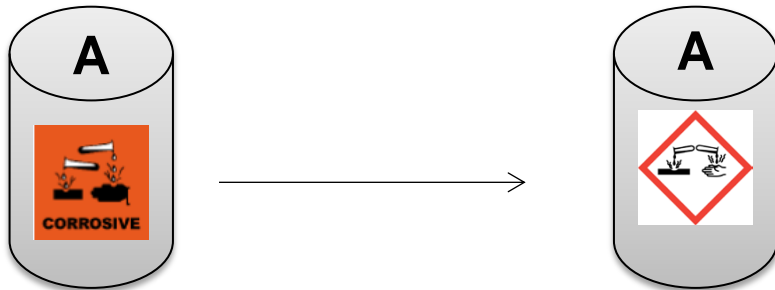
## CLP 2015: what will happen?

Generic concentration limits for substances triggering classification of mixtures will change.

Ingredient classified as:	Concentration triggering classification of a mixture as:			
	 Reversible Eye Effect Category 2		 Irreversible Eye Effect Category 1	
	Before (DPD)	From 1 June (CLP)	Before (DPD)	From 1 June (CLP)
 H319 (R36)	≥20%	≥10%		
 H318 (R41)	≥5% but <10%	≥1% but <3%	≥10%	≥3%

# CLP 2015: what could happen

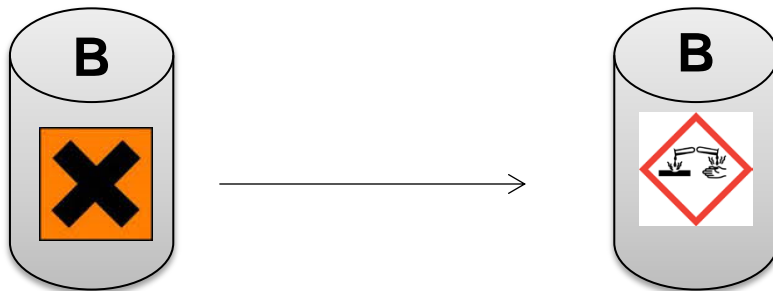
## Example A - Drain wash



One of the challenges with CLP is to assure appropriate and harmonized classification on detergent and cleaning products.

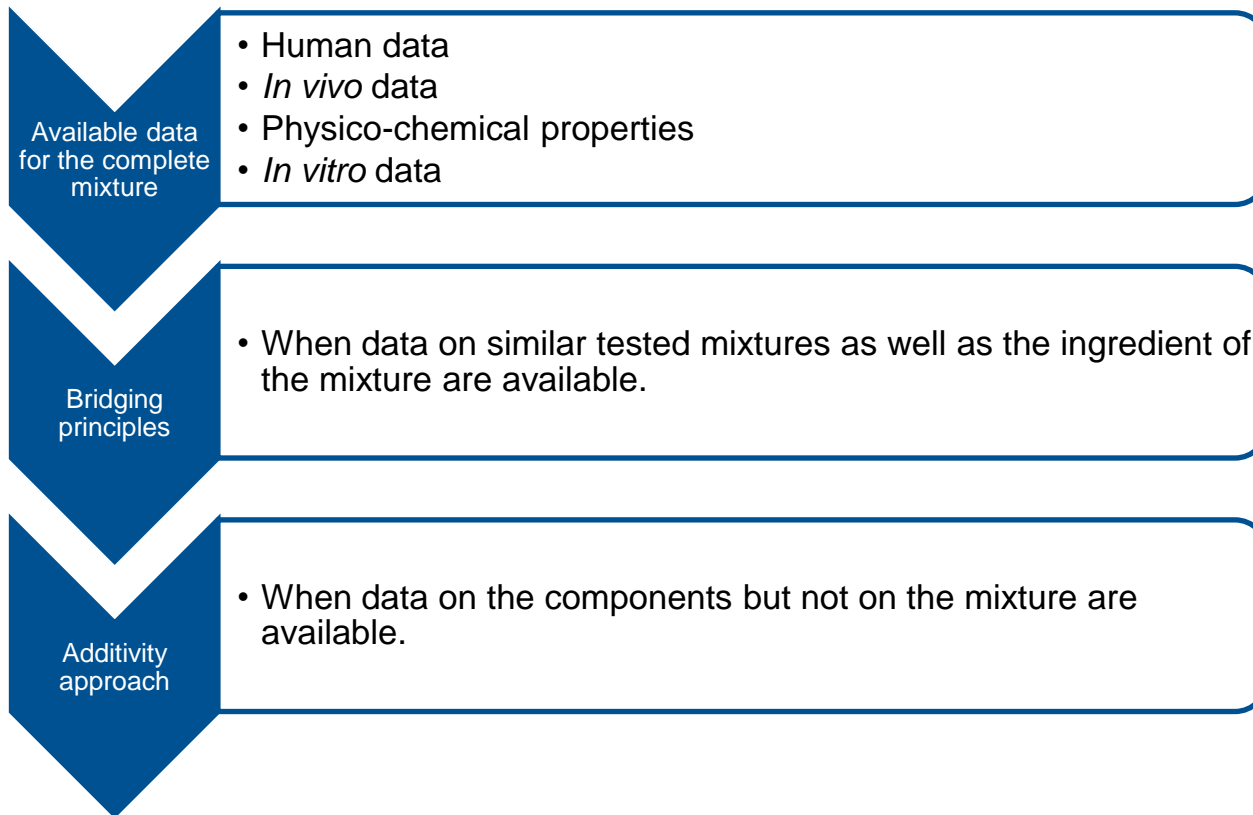
Over classification of a mixture may discourage the consumer to buy the product!

## Example B - Hand dish wash detergent



# CLP 2015: Classification of mixtures for serious eye damage/eye irritation

The procedure for classifying mixtures is a stepwise approach.



## CLP 2015: How can AkzoNobel help?

### 1. Review the classification of our products

- CESIO
- The Bovine Corneal Opacity and Permeability (BCOP) test

### 2. A.I.S.E. in *vitro* program

### 3. Provide guideline formulations

- Household formulation
- I&I formulation



# 1. Review the classification of our products



## CESIO program

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Many of our products are classified based on the recommendations from CESIO.

CESIO (European Committee of Organic Surfactants and their Intermediates)

- The majority of the European Surfactant Producers are represented by CESIO.
- Experts from the member companies have reviewed available data to access the classification and labeling of the major surfactants groups.

# Bovine Corneal Opacity and Permeability (BCOP) test (OECD TG 437; TM B.47)

**Purpose:** Identify test items that can induce serious eye damage and to identify test items not requiring classification for eye irritation or serious eye damage.

**Method:** Damage by the test item is assessed by quantitative measurements of changes in corneal opacity and permeability.

Opacity – Decreased light transmission through the cornea.

Permeability – Increased passage of sodium fluorescein dye through the cornea (optical density at 492 nm).






*In vitro* Irritancy Score = mean opacity value + 15 x mean OD<sub>492</sub> value

IVIS	CLASSIFICATION
≤ 3	No category. Not requiring classification to UN GHS or EU CLP
> 3; ≤ 55	No prediction of eye irritation can be made
> 55	Category 1. UN GHS or EU CLP Cause serious eye damage

## IVIS for AkzoNobel surfactants

AkzoNobel uses these IVIS scores as guidelines.

The responsibility for the correct classification of a mixture falls on the formulator.

PRODUCT	CLASSIFICATION	IVIS
Ethylan 1005 (Ethylan 1008)	 H318	2.5
Berol 260 (Berol 266)	 H318	6.8
Berol R648 NG	  H302; H315; H318	7.8
AG 6206	 H318	32.3

Currently, not possible to set SCL based on in vitro test results.

## Statement – Berol 260

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[...]

There is also a current review of the classification of the ethoxylated alcohols being carried out by a working group within CESIO, this has shown that for the C9-11 ethoxylated alcohols with 4 moles of ethylene oxide or less they are consistently classified as Category 2B based on the UN GHS criteria which is category 2 for EU CLP.

[...]

Based on the above weight of evidence I have concluded that **the classification of Berol 260 as a C9-11 alcohol ethoxylated with 4 moles of ethylene oxide should be changed from Category 1 to Category 2 for eye irritation with EU hazard statement H319.**

## Statement – Ethylan 1005/Ethylan 1008

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[...]

We have recently **tested Ethylan 1005 in the BCOP** test at the 10% dilution recommended for testing surfactants. We were surprised that **the score in this test was extremely low at 2.5**, which would suggest that the neat Ethylan 1005 and by analogy the 1008 would not even be classified as eye irritants.

[...]

While I believe that the results from the BCOP on Ethylan 1005 underestimate the eye irritant potential for the product itself, it seems extremely unlikely that **the 10% solution in water** would be category 1 for eye irritation but would, based on our experience with related products with similar scores, **be expected to be Category 2**. Ethylan 1008 would not be expected to be more irritant than Ethylan 1005 so the same could apply.

## **2. A.I.S.E program**

## A.I.S.E. program

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### A.I.S.E. in *vitro* program

ERASM project to address the issue of mixtures due to the new CLP classification limits for Category 1 eye damage.

#### Purpose:


- Develop an in vitro test strategy to set specific concentration limits for surfactants.
- Develop a method to allow classification as Category 2 based on in vitro data.



## **3. Guideline formulations**



## Guideline formulations – Household

Formulation 1		Label
1-2%	Berol 260	
1-2%	Berol SurfBoost AD15	Non labelled
0.5%	Dissolvine GL-47-S	Non labelled*
Balance water		

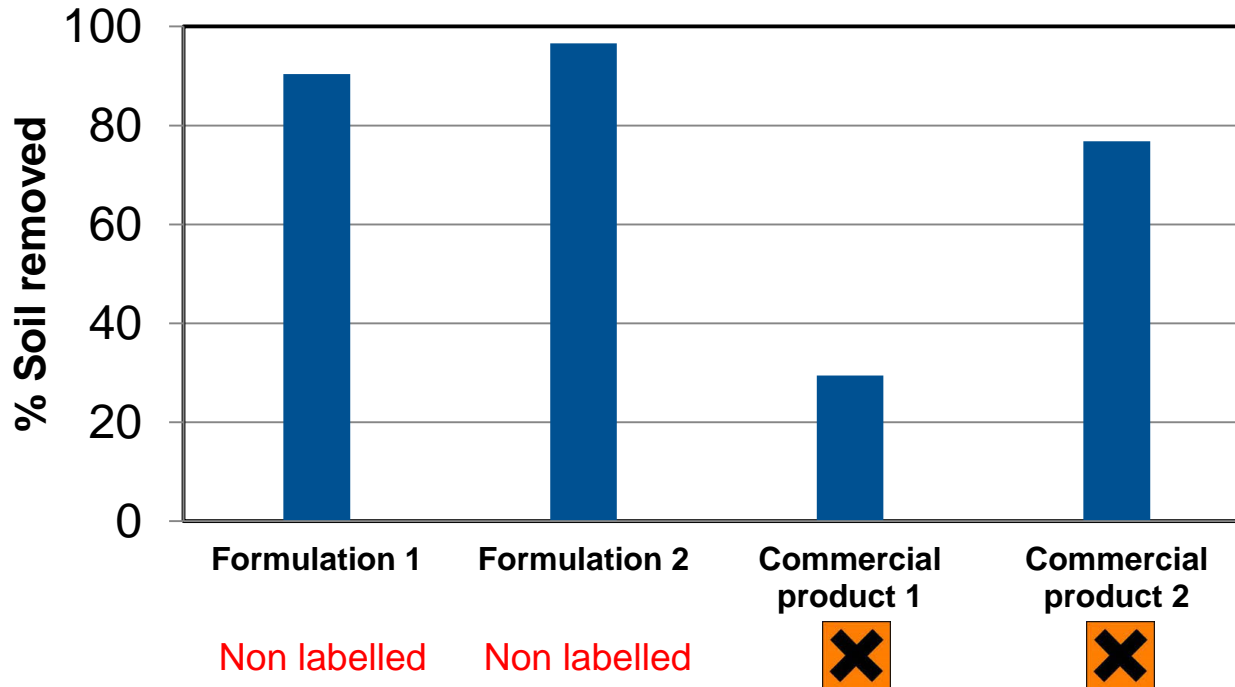
\*not corrosive to skin and / or eyes

Formulation 2		Classification
3%	Berol 185	Non labelled
1%	Berol SurfBoost AD15	Non labelled
0.5%	Sodium Citrate	Non labelled
Balance water		



## Cleaning tests – Household formulations

Non-mechanical cleaning of ceramic tiles soiled with “kitchen soil” (20% lambert soil, 50% corn oil, 30% water)



### Formulation 1

1% Berol 260  
2% Berol SurfBoost AD15  
0.5% Dissolvine GL-47-S  
Balance water  
pH ~11

### Formulation 2

3% Berol 185  
1% Berol SurfBoost AD15  
0.5% Citrate  
Balance water  
pH ~8

### Commercial product 1




<5% nonionic surfactants  
pH ~11

### Commercial product 2

5-15% nonionic surfactants  
pH ~11

Formulation 1 and 2 provides better or equal cleaning performance as the two references.

## Guideline formulations – I&I

Formulation 3		Label
3-4%	Berol 260	
<3%**	Berol R648 NG	 
6-8%	Dissolvine GL-47-S	Non labelled*
Balance water		

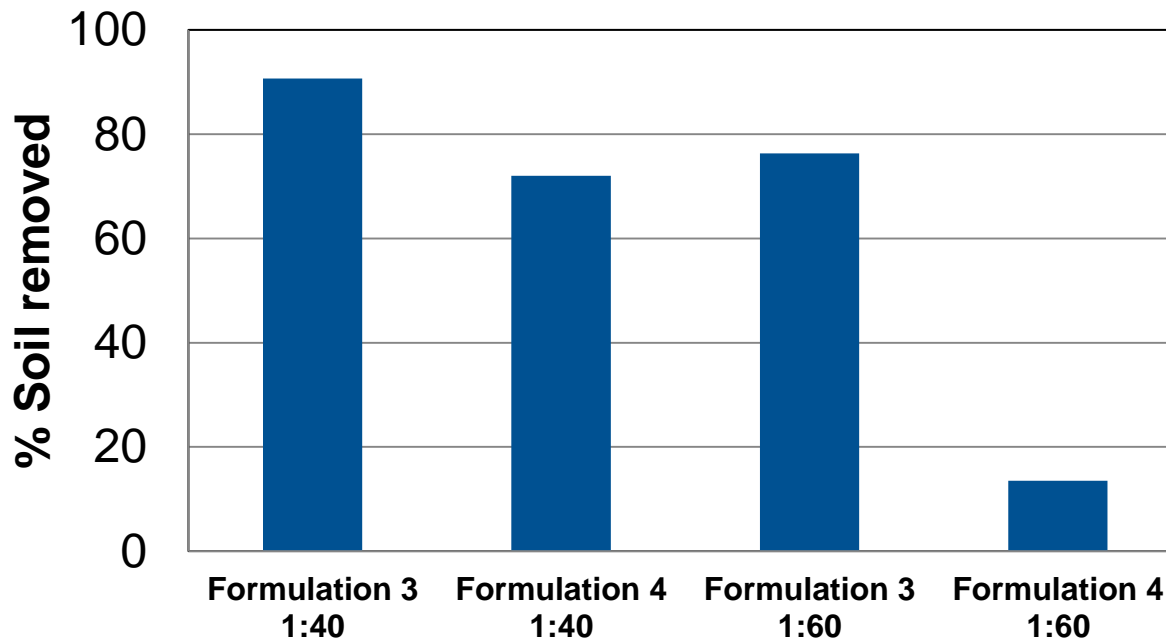
\*not corrosive to skin and / or eyes

\*\* The Eye effect category 1 classification can be avoided by using <3% Berol R648NG.



## Cleaning tests – I&I formulations

Non-mechanical cleaning of coated metal plates soiled with train engine soil.



### Formulation 3

4% Berol 260  
 2.8% Berol R648 NG  
 6% Dissolvine GL-47-S  
 Balance water  
 pH ~10 adjusted with citric acid

### Formulation 4

4% Berol 260  
 5% SCS (40%)  
 6% Dissolvine GL-47-S  
 Balance water  
 pH ~10 adjusted with citric acid

The unique chemistry of Berol R648 NG enables superior cleaning performance at low concentrations!

## Non classified products

### Nonionics

- Berol 185
- Berol SurfBoost AD15
- Amadol CMA-2 80%

### Polymers

- Alcoguard 4160
- Alcosperse 747
- Alcoguard H5941

### Amphoterics

- Ampholak YJH-40
- Ampholak 7CX/C
- Ampholak 7TX
- Ampholak XO7/C



Thank you for your attention

