

# Authoring SDS for Pesticides

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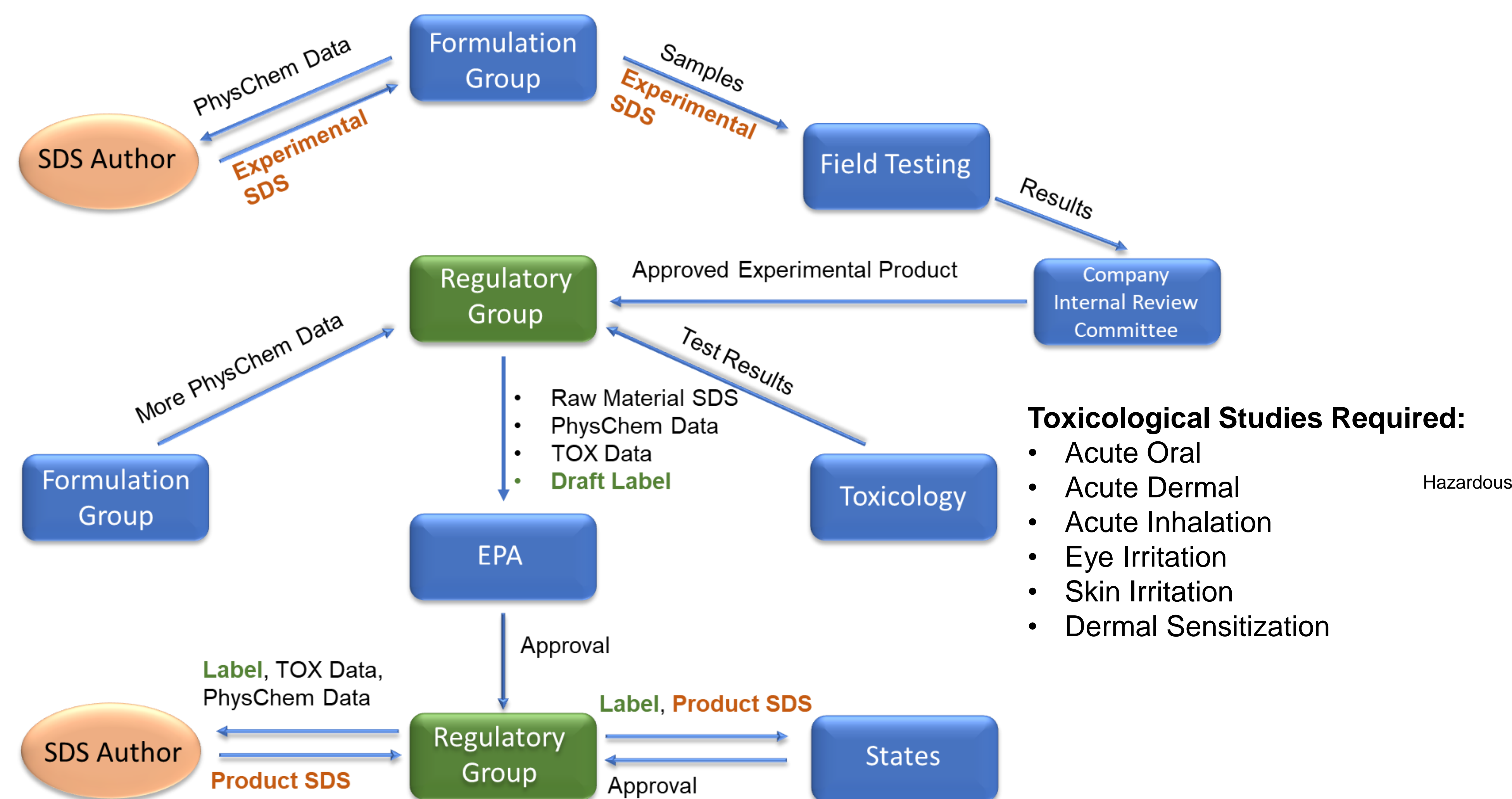
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## Abstract:

Pesticides are unique chemical products that are associated with stringent regulations due to high toxicity. In addition to registration dossiers and labeling, safety data sheet (SDS) is another useful tool to provide valuable information about chemical hazard and safe handling of pesticides. In the EU, the SDS requirements for pesticides (plant protection products) came from the REACH registration, following the CLP (adopted from GHS) standard just like other hazardous chemicals. In the US, pesticide labels are regulated by EPA under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and exempted from the OSHA HazCom Standard. SDS, on the other hand, must comply with the OSHA HazCom, but at the same time, must not obscure or conflict with the labeling approved by EPA. The inconsistency between EPA and OSHA requirements makes SDS authoring for pesticides challenging.

This presentation will compare the classification standard between FIFRA and OSHA HazCom regulations, and discrepancies likely to occur between the FIFRA label and SDS, such as signal word, symbol, hazard statements, and precautionary statements. In addition to regulation differences, these can also be caused by human factors, because pesticide labels and SDS are oftentimes handled by different people, and very likely from different departments. In this poster, we will discuss our workflow to share data and communicate other critical information, ensuring our SDS is accurate, up to date and free of misleading messages.

## AMVAC Workflow of Authoring SDS for a Newly Registered Pesticide Product



SDS author belongs to Technology department while the label creator belongs to Regulatory Affairs department.

## SDS and Label Discrepancies due to OSHA and FIFRA regulation differences

### Example: Acute Oral, Acute Dermal, Acute Inhalation

**Label Development:** EPA Label Review Manual (A living document that summarizes current requirements, policies, and guidance that are found in published regulations, publicly available documents, and historically established practices.)

#### EPA Label Review Manual

	Category I	Category II	Category III	Category IV
Acute Oral, LD50 (mg/kg)	≤50	>50 – 500	>500 – 5,000	>5,000
Acute Dermal, LD50 (mg/kg)	≤200	>200 – 2,000	>2,000 – 5,000	>5,000
Acute Inhalation, LC50 (mg/l)	≤0.05	>0.05 – 0.5	>0.5 – 2	>2
Signal Word	DANGER	WARNING	CAUTION	None required (or CAUTION as optional)

DANGER  
POISON ☠

**SDS Development:** OSHA Hazard Communication Standard, 29 CFR Part 1910.1200

#### OSHA Hazard Communication Standard

	Category 1	Category 2	Category 3	Category 4
Acute Oral, LD50 (mg/kg)	≤5	>5 - 50	>50 - 300	>300 - 2000
Acute Dermal, LD50 (mg/kg)	≤50	>50 - 200	>200 - 1000	>1000 - 2000
Acute Inhalation, LC50				
Gases (ppmV)	≤100	>100 - 500	>500 - 2500	>2500 - 20000
Vapors (mg/l)	≤0.5	>0.5 - 2.0	>2.0 - 10.0	>10.0 - 20.0
Dusts and Mists (mg/l)	≤0.05	>0.05 - 0.5	>0.5 - 1.0	>1.0 - 5.0
Signal Word	Danger			Warning

Note: Per FIFRA, if methanol is present in concentrations of 4% or more, the recommended signal word, regardless of the toxicity categories noted in the acute toxicity review, is "DANGER".

## AMVAC Product Example: Bidrin® 8

### Toxicological Information


Components	Species	Test Results
Dicrotophos (CAS 141-66-2)		
Acute Dermal LD50	Rabbit	876 mg/kg (males) 487 mg/kg (females)
Inhalation LC50	Rat	> 0.059 mg/l
Oral LD50	Rat	11 mg/kg (males) 8 mg/kg (females)

	Classification	SDS	Label
Acute Oral	Classification	Cat. 2	Cat. I
	Signal Word	Danger	Danger
	Hazard Statement	Fatal if Swallowed	Fatal if swallowed.
Acute Dermal	Classification	Cat. 3	Cat. II
	Signal Word	Danger	Warning
	Hazard Statement	Toxic in contact with Skin	May be fatal if absorbed through skin
Acute Inhalation	Classification	Cat. 2	Cat. II
	Signal Word	Danger	Warning
	Hazard Statement	Fatal if inhaled.	May be fatal if inhaled.
Signal Word		Danger	DANGER POISON



DANGER  
POISON ☠

### Section 2 of the SDS:

2. Hazard(s) Identification		
<b>Physical hazards</b>	Flammable liquids	Category 3
<b>Health hazards</b>	Acute toxicity, oral	Category 2
	Acute toxicity, dermal	Category 3
	Acute toxicity, inhalation	Category 2
	Serious eye damage/eye irritation	Category 2B
	Sensitization, skin	Category 1
<b>Environmental hazards</b>	Aquatic acute toxicity	Category 1
	Aquatic chronic toxicity	Category 1
<b>Label elements</b>		
<b>Signal word</b>	Danger	
<b>Hazard statement</b>	H226 Flammable liquid and vapor. H300 Fatal if swallowed. H330 Fatal if inhaled. H311 Toxic in contact with skin. H320 Causes eye irritation. H317 May cause an allergic skin reaction. H400 Very toxic to aquatic life. H410 Very toxic to aquatic life with long lasting effects.	

### Partial Label:

**RESTRICTED USE PESTICIDE**  
Due to Acute Oral, Dermal and Inhalation Toxicity and Risks to Wildlife.  
For retail sale to, and use only by Certified Applicators or persons under the direct supervision of a Certified Applicator, and only for those uses covered by the Certified Applicator's certification.

**Bidrin® 8**  
WATER MISCIBLE INSECTICIDE

ACTIVE INGREDIENT: Dicrotophos (Dimethyl phosphate of 3-hydroxy N,N-dimethyl-cis-crotonamide).....82.0%

INERT INGREDIENTS:.....18.0%

TOTAL: 100.0%

Contains 8 lbs. active ingredient per gallon.  
**KEEP OUT OF REACH OF CHILDREN**  
**DANGER POISON**

**PELIGRO**

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.  
(If you do not understand this label, find someone to explain it to you in detail).

**PRECAUTIONARY STATEMENTS**  
**HAZARDS TO HUMANS AND DOMESTIC ANIMALS**  
DANGER: Fatal if swallowed. May be fatal if absorbed through skin or if inhaled. Causes moderate eye irritation. Do not get in eyes, on skin, or on clothing. Do not breathe spray mist. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

## SDS and Label Discrepancies Due to Human Errors

1. Different set of TOX data used
2. Misclassification not caught by reviewer.
3. Lack of peer review between SDS author and Label creator (SDS Manager and Regulatory)
4. Once made and on file with EPA, the label does not get updated as much as the SDS does. And therefore, some new information might not be captured on the label as compared with the SDS.

## More communication and peer review needed between SDS author and label creator!

### References:

1. Label Review Manual, Office of Pesticides Programs, United States Environmental Protection Agency, February 2021.
2. 29 CFR Part 1910.1200- Hazard Communication
3. 40 CFR Part 156, Labeling Requirements for Pesticides and Devices