Hazardous Waste Sampling & Interpreting Lab Results

Arleen Gurfield, Supervising EHS – San Diego County CUPA

M-B1

February 26, 2024

26th California Unified Program Annual Training Conference
February 26-29, 2024

Question 1:

Where are you from?

Course Objectives

01. WHAT to Sample
02. WHEN to Sample
03. WHICH tests to request
04. INTERPRETING the Sample Results
05. NOW WHAT?

Question 2:

Why do we need to sample?

Waste Determination

01. Is it a WASTE?
02. Is it a HAZARDOUS WASTE?
03. Is it LISTED or CHARACTERISTIC?
04. Is it EXEMPTED or EXCLUDED?

Who is responsible for making the Determination?
How can they make a Waste Determination?

Hazardous Waste CHARACTERISTICS

Test Methods - SW-846

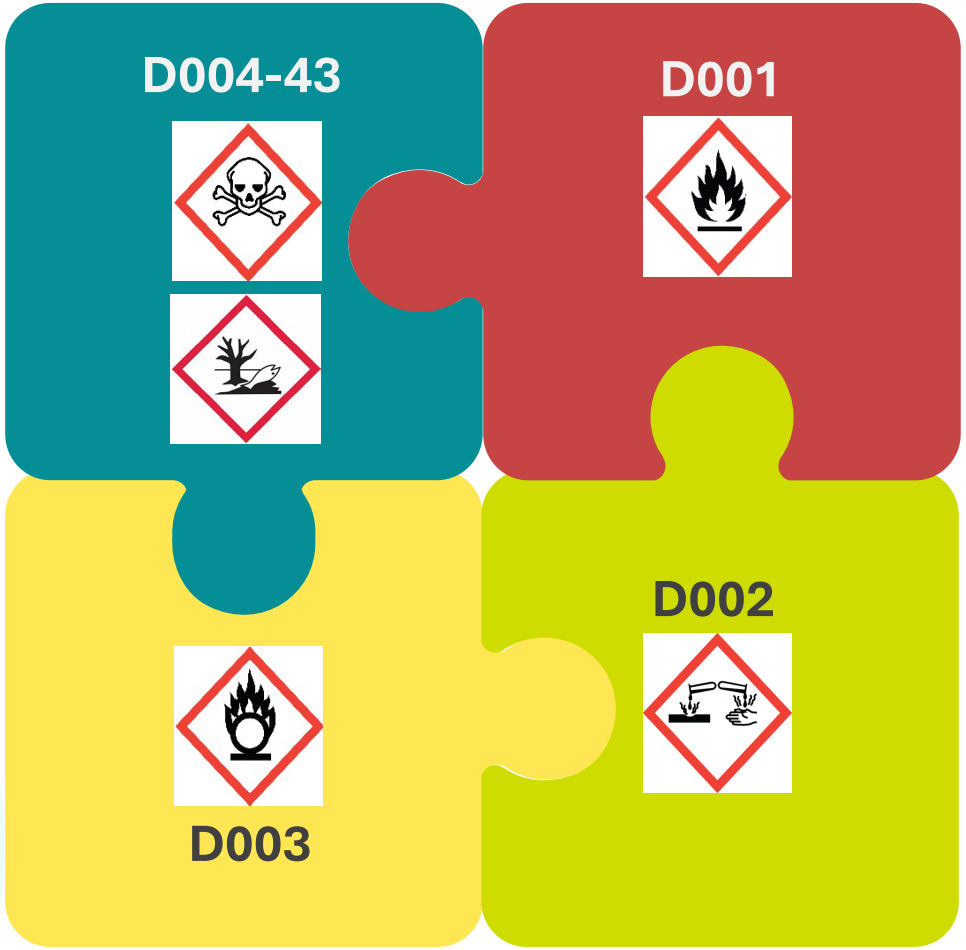
Toxic

RCRA: TCLP

Non-RCRA: TTLC, STLC, Definitive Fish Bioassay, Oral, Dermal, or Inhalation

Reactive

RCRA : Cyanides and Sulfides



Ignitable

Flashpoint <140ºF

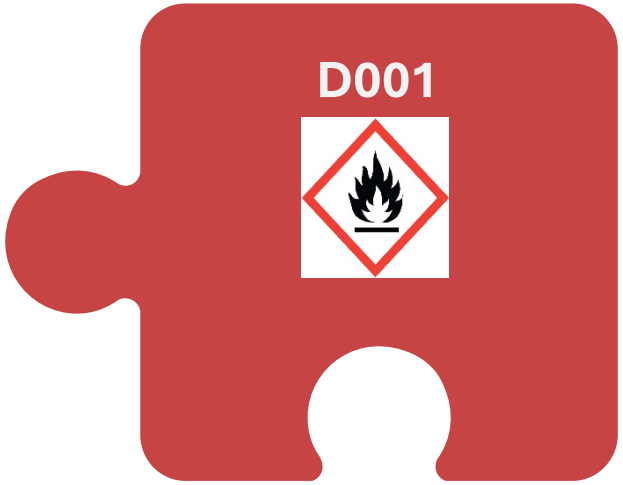
Corrosive

pH ≤2 or ≥12.5

Liquids are RCRA

Solids are Non-RCRA (CA)

IGNITABILITY



Ignitable: Liquid (other than <24% alcohol) with a Flashpoint <140°F

-or-

- A non-liquid under standard temperature and pressure (STP), is capable of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard. Non-liquids are more difficult to test.
- Ignitable compressed gas
- Oxidizer

California uses the same definition and test method as Federal

TEST METHOD: 1010A (ASTM D93) -
Pensky-Martens Closed Cup Method

CORROSIVITY

D002
352

Corrosive: pH ≤2 or ≥12.5

RCRA – D002	Non-RCRA (CA) - 352
LIQUID containing at least 20% water	**SOLID** containing less than 20% water
TEST METHOD: 9040C - pH Electrometric Measurement	**TEST METHOD:** 9045D - Soil and Waste pH (the solid is mixed 1:1 with water)

REACTIVITY

D003

TEST METHODS:

9010C – **Cyanides**

9030B - **Sulfides**

Reactive: a solid waste with any of the following properties:

(1) It is **normally unstable** and readily undergoes violent change without detonating.

(2) It **reacts violently with water**.

(3) It forms potentially **explosive mixtures** with water.

(4) When mixed with water, it **generates toxic gases, vapors or fumes** in a quantity sufficient to present a danger to human health or the environment.

(5) It is a **cyanide or sulfide bearing waste** which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(6) It is **capable of detonation or explosive reaction** if it is subjected to a *strong initiating source or if heated under confinement*.

(7) It is readily capable of detonation or explosive decomposition or reaction at *standard temperature and pressure*.

(8) It is a **forbidden explosive** as defined in 49 CFR 173.54, or is a Division 1.1, 1.2 or 1.3 explosive as defined in 49 CFR 173.50 and 173.53.

Question 3:

How many tests are there for toxicity?

TOXICITY

RCRA (D004-43)

TEST METHOD:
1311 – ***Toxicity Characteristic Leaching Procedure (TCLP)***

The TCLP is designed to determine the mobility of *both organic and inorganic* analytes present in liquid, solid, and multiphasic wastes.

Tests for 8 metals and 14 organic chemicals.

Non-RCRA (CA)

TEST METHODS for INORGANICS:
6010B - Inductively Coupled Plasma-Atomic Emission Spectrometry (aka CAM17)
7470A/1B – Mercury Cold-Vapor Technique
300.1 - Fluoride Salts

TEST METHODS for ORGANICS:
8260B - Volatile Organic Compounds by GC/MS
8270C - Semivolatile Organic Compounds by GC/MS
8082A - Polychlorinated Biphenyls (PCBs) by GC
8082B - Dioxins and Dibenzofurans by GC/MS
8015M - Diesel, Gasoline, and Kerosene Range organics

Results from these test are used to determine if the sample exceeds:
Total Threshold Limit Concentration (TTLC) or Soluble Threshold Limit Concentration (STLC)

RCRA: TCLP

D004-43

8 metals (D004-011)
6 pesticides (D012-017)
26 organic chemicals (D018-043)

Substance	*20x rule*	*TCLP (mg/L)*
Arsenic (D004)	*100*	5
Barium† (D005)	*2,000*	100
Cadmium (D006)	*20*	1
Chromium VI (D007)	*100*	5
Lead (D008)	*100*	5
Mercury (D009)	*4*	0.2
Selenium (D010)	*20*	1
Silver (D011)	*100*	5
METHOD:	-	**1311 / 6010B**
Benzene (D018)	*10*	0.5
Carbon Tetrachloride (D019)	*10*	0.5
Chlorobenzene (D021)	*2,000*	100.0
Chloroform (D022)	*120*	6.0
1,4-Dichlorobenzene (D027)	*150*	7.5
1,2-Dichloroethane (D028)	*10*	0.5
1,1-Dichloroethene (D029)	*14*	0.7
Hexachlorobutadiene (D033)	*10*	0.5
Hexachloroethane (D034)	*60*	3.0
Nitrobenzene (D036)	*40*	2.0
Pyridine (D038)	*100*	5.0
Tetrachloroethylene (D039)	*14*	0.7
Trichloroethylene (D040)	*10*	0.5
Vinyl Chloride (D043)	*4*	0.2
METHOD:	-	**1311 / 8260B**

CA: TTLC / STLC

ORGANICS

Trichloroethylene	*2,040*	204	2,040
METHOD:	-	**WET / 8260B**	**8260B**
Aldrin	*1*	0.14	1.4
Chlordane	*3*	0.25	2.5
DDT, DDE, DDD	*1*	0.1	1
Dieldrin	*8*	0.8	8
Endrin	*0*	0.02	0.2
Heptachlor	*5*	0.47	4.7
Kepone	*21*	2.1	21
Methoxychlor	*100*	10	100
Mirex	*21*	2.1	21
Pentachlorophenol	*17*	1.7	17
Toxaphene	*5*	0.5	5
METHOD:	-	**WET / 8270C**	**8270C**
PCB	*50*	5	50
METHOD:	-	**WET / 8082**	**8082**
Dioxin	*0*	0.001	0.01
METHOD:	-	**WET / 8280A**	**8280A**

INORGANICS

Substance	*10x rule*	*STLC (mg/L)*	*TTLC (mg/Kg)*
Antimony	*150*	15	500
Arsenic	*50*	5	500
Barium†	*1,000*	100	10,000
Beryllium	*8*	0.75	75
Cadmium	*10*	1	100
Chromium VI	*50*	5	500
Chromium, total	*50*	5 (560)‡	2,500
Cobalt	*800*	80	8,000
Copper	*250*	25	2,500
Lead	*50*	5	1,000
Molybdenum††	*3,500*	350	3,500
Nickel	*200*	20	2,000
Selenium	*10*	1	100
Silver	*50*	5	500
Thallium	*70*	7	700
Vanadium	*240*	24	2,400
Zinc	*2,500*	250	5,000
METHOD:	-	**WET / 6010B**	**6010B**
Mercury	*2*	0.2	20
METHOD:	-	**WET / 7470A/1B**	**7470A/1B**
Fluoride salts	*1,800*	180	18,000
METHOD:	-	**WET / 300.1**	**300.1**

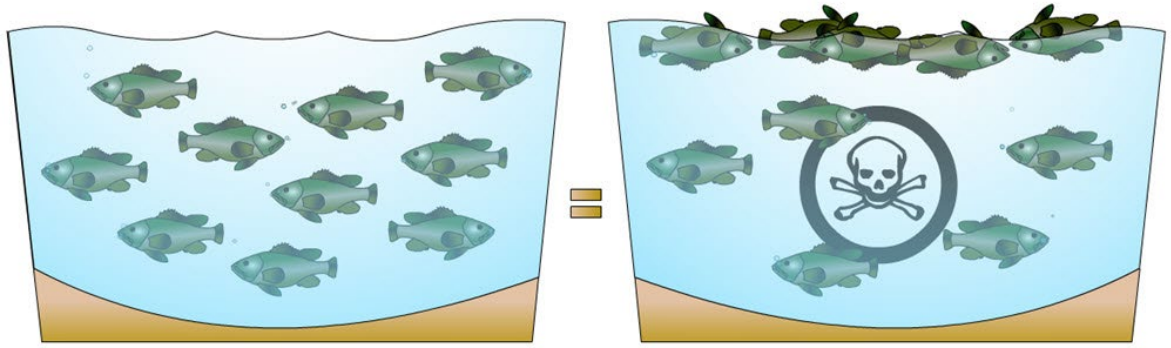
CA: TOXICITY

Non-RCRA (CA)

ADDITIONAL TEST METHODS:

Acute Oral LD_{50} (rat): <2,500 mg/kg
Acute Dermal LD_{50} (rabbit): <4,300 mg/kg
Acute Inhalation LC_{50} (rat): <10,000 ppm
Acute Aquatic 96-hour LC_{50}: <500 mg/L

- *Oncorhynchus mykiss* (rainbow trout)
- *Pimephales promelas* (fathead minnow)
- *Notemigonus crysoleucas* (golden shiner)



What questions might you ask?

GHS Pictograms

Health Hazard

- Carcinogen
- Mutagenicity
- Reproductive Toxicity
- Respiratory Sensitizer
- Target Organ Toxicity
- Aspiration Toxicity

Flame

- Flammables
- Pyrophorics
- Self-Heating
- Emits Flammable Gas
- Self-Reactives
- Organic Peroxides

Exclamation Mark

- Irritant (skin and eye)
- Skin Sensitizer
- Acute Toxicity (harmful)
- Narcotic Effects
- Respiratory Tract Irritant
- Hazardous to Ozone Layer

(Non Mandatory)

Gas Cylinder

- Gases Under Pressure

Corrosion

- Skin Corrosion/Burns
- Eye Damage
- Corrosive to Metals

Exploding Bomb

- Explosives
- Self-Reactives
- Organic Peroxides

Flame Over Circle

- Oxidizers

Environment

(Non Mandatory)

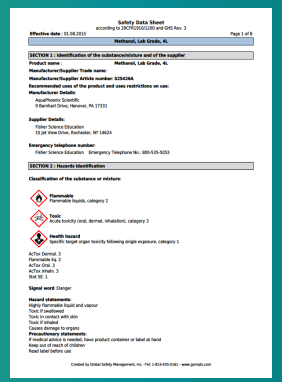
- Aquatic Toxicity

Skull and Crossbones

- Acute Toxicity (fatal or toxic)

Need more details?

Refer to the Safety Data Sheets



Safety Data Sheet
according to 29CFR1910.1200 and GHS Rev. 3

Effective date : 01.08.2015 Page 1 of 8

Methanol, Lab Grade, 4L

SECTION 1 : Identification of the substance/mixture and of the supplier

Product name : Methanol, Lab Grade, 4L

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: S25436A

Recommended uses of the product and uses restrictions on use:

Manufacturer Details:
AquaPhoenix Scientific
9 Barnhart Drive, Hanover, PA 17331

Supplier Details:
Fisher Science Education
15 Jet View Drive, Rochester, NY 14624

Emergency telephone number:
Fisher Science Education Emergency Telephone No.: 800-535-5053

SECTION 2 : Hazards identification

Classification of the substance or mixture:

Flammable
Flammable liquids, category 2

Toxic
Acute toxicity (oral, dermal, inhalation), category 3

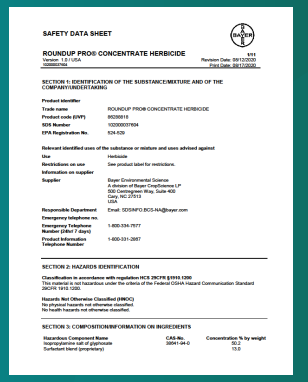
Health hazard
Specific target organ toxicity following single exposure, category 1

AcTox Dermal. 3
Flammable liq. 2
AcTox Oral. 3
AcTox Inhals. 3
Skill SE. 1

Signal word *Danger*

Hazard statements:
Highly flammable liquid and vapour
Toxic if swallowed
Toxic in contact with skin
Toxic if inhaled
Causes damage to organs
Precautionary statements:
If medical advice is needed, have product container or label at hand
Keep out of reach of children
Read label before use

Created by Global Safety Management, Inc. Tel: 1-813-435-5182 - www.gsmsds.com



SAFETY DATA SHEET

ROUNDUP PRO® CONCENTRATE HERBICIDE

Version: 1.0 / USA 1/11
Revision Date: 09/12/2020
Print Date: 09/17/2020

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Trade name ROUNDUP PRO® CONCENTRATE HERBICIDE
Product code (EVF) 80288818
SDS Number 102000037804
EPA Registration No. 524-529

Relevant identified uses of the substance or mixture and uses advised against
Use Herbicide
Restrictions on use See product label for restrictions.
Information on supplier
Supplier Bayer Environmental Science
A division of Bayer CropScience LP
800 Centregreen Way, Suite 400
Cary, NC 27513
USA
Responsible Department Email: SDSINFO.BCS-NA@bayer.com
Emergency telephone no.
Emergency Telephone Number (Office 7 days) 1-800-334-7577
Product Information Telephone Number 1-800-331-2867

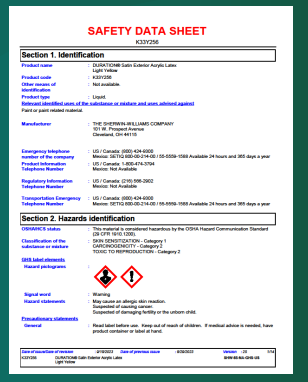
SECTION 2: HAZARDS IDENTIFICATION

Classification in accordance with regulation HCS 29CFR §1910.1200
This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

Hazards Not Otherwise Classified (HNOC)
No physical hazards not otherwise classified.
No health hazards not otherwise classified.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component Name	CAS-No.	Concentration % by weight
Isopropylamine salt of glyphosate	38641-94-0	50.2
Surfactant blend (proprietary)		15.0



SAFETY DATA SHEET

K33Y256

Section 1. Identification

Product name : DURATION® Satin Exterior Acrylic Latex
Product code : K33Y256
Other means of identification : Not available.
Product type : Liquid.
Relevant identified uses of the substance or mixture and uses advised against
Paint or paint related material.

Manufacturer : THE SHERWIN-WILLIAMS COMPANY
101 W. Prospect Avenue
Cleveland, OH 44115

Emergency telephone number of the company : US / Canada: (800) 424-9300
Mexico: SETIQ 800-00-214-00 / 55-5559-1588 Available 24 hours and 365 days a year
Product Information Telephone Number : US / Canada: 1-800-474-3794
Mexico: Not Available
Regulatory Information Telephone Number : US / Canada: (216) 566-2902
Mexico: Not Available
Transportation Emergency Telephone Number : US / Canada: (800) 424-9300
Mexico: SETIQ 800-00-214-00 / 55-5559-1588 Available 24 hours and 365 days a year

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture : SKIN SENSITIZATION - Category 1
CARCINOGENICITY - Category 2
TOXIC TO REPRODUCTION - Category 2

GHS label elements
Hazard pictograms :

Signal word : Warning
Hazard statements : May cause an allergic skin reaction.
Suspected of causing cancer.
Suspected of damaging fertility or the unborn child.

Precautionary statements
General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Date of issue/Date of revision	3/18/2021	Date of previous issue	8/26/2020	Version	20	1/14
K33Y256	DURATION® Satin Exterior Acrylic Latex Light Tintable			SHW-85-NA-GHS-US		

Fixative - SDS

(2012 OSHA Hazard Communication Standard (29 CFR 1910.1200))

SAFETY DATA SHEET

Diff Quik® Set SDS # : duhm0006

Section 1. Identification

Product identifier : Diff Quik® Set

Product code : 130832, B4132-1A, 10445586, 10459382

Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Not applicable.

Manufacturer : Medion Grifols Diagnostics AG
Bonnstrasse 9
CH-3186 Düdingen
Switzerland
Tel.: (+41) 26 492 8702
Fax: (+41) 26 492 8656

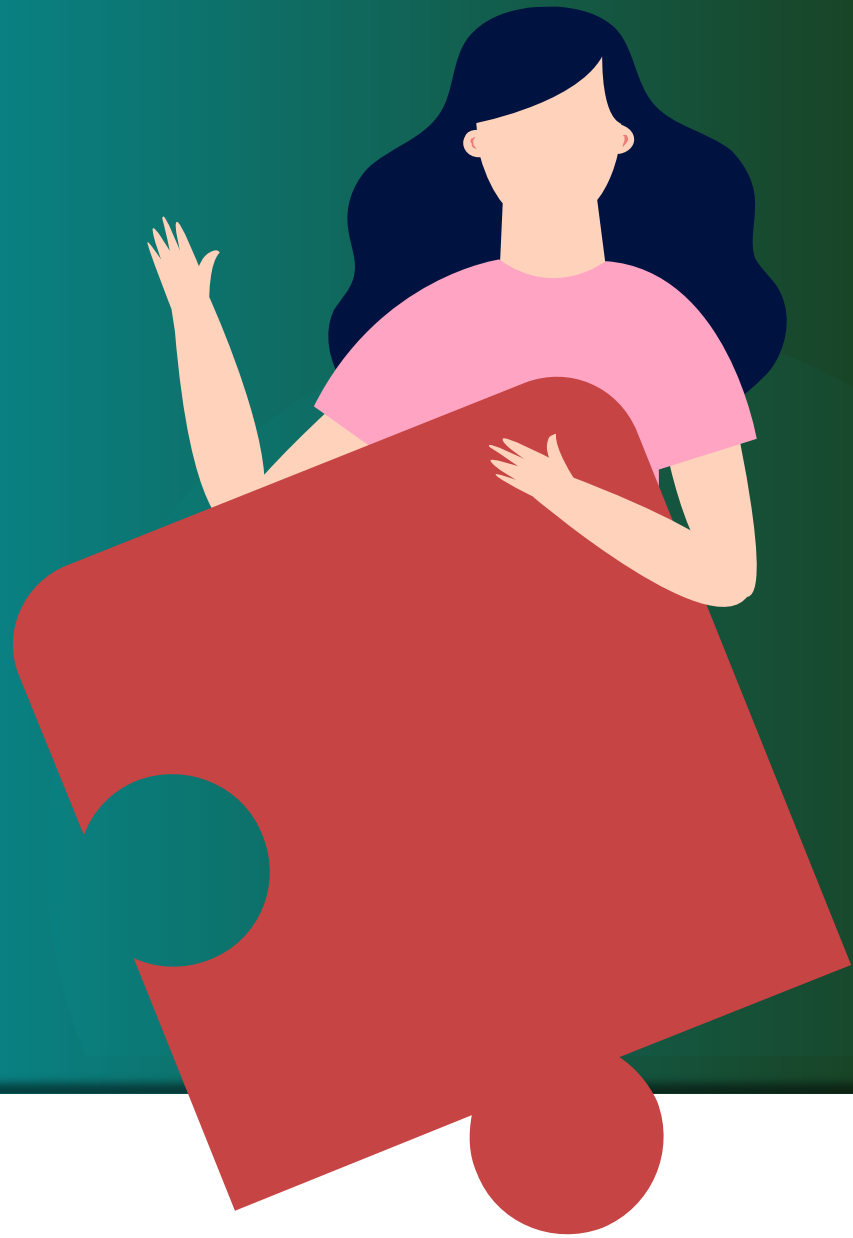
Supplier : Siemens Healthcare Diagnostics Inc.
511 Benedict Avenue
Tarrytown, NY 10591-5097 USA
1-877-229-3711
(800) 424-9300 (CHEMTREC) (24/365)

Section 2. Hazards identification

OSHA/HCS status	Diff Quik Fixative Solution	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
	Diff-Quik Solution I	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910. 1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.
	Diff-Quik Solution II	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910. 1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.
Classification of the substance or mixture	Diff Quik Fixative Solution	FLAMMABLE LIQUIDS - Category 2 ACUTE TOXICITY (inhalation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 1
	Diff-Quik Solution I	Not classified.
	Diff-Quik Solution II	Not classified.
Additional information	Not available.	
	Not available.	

GHS label elements

Date of issue/Date of revision : 5/12/2017 *Date of previous issue* : 1/22/2016 *Version* : 1.05 1/19



Eosin Y - SDS

ThermoFisher SCIENTIFIC

SAFETY DATA SHEET

Creation Date 26-Sep-2009 **Revision Date** 24-Dec-2021 **Revision Number** 5

1. Identification

Product Name Eosin Y, Alcoholic 0.25% Solution

Cat No. : SE22-500D

Synonyms Eosin yellow solution, alcoholic

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Specific target organ toxicity (single exposure)	Category 2
Target Organs - Optic nerve, Central nervous system (CNS).	

Label Elements

Signal Word
Danger

Hazard Statements
Highly flammable liquid and vapor
Causes serious eye irritation
May cause damage to organs

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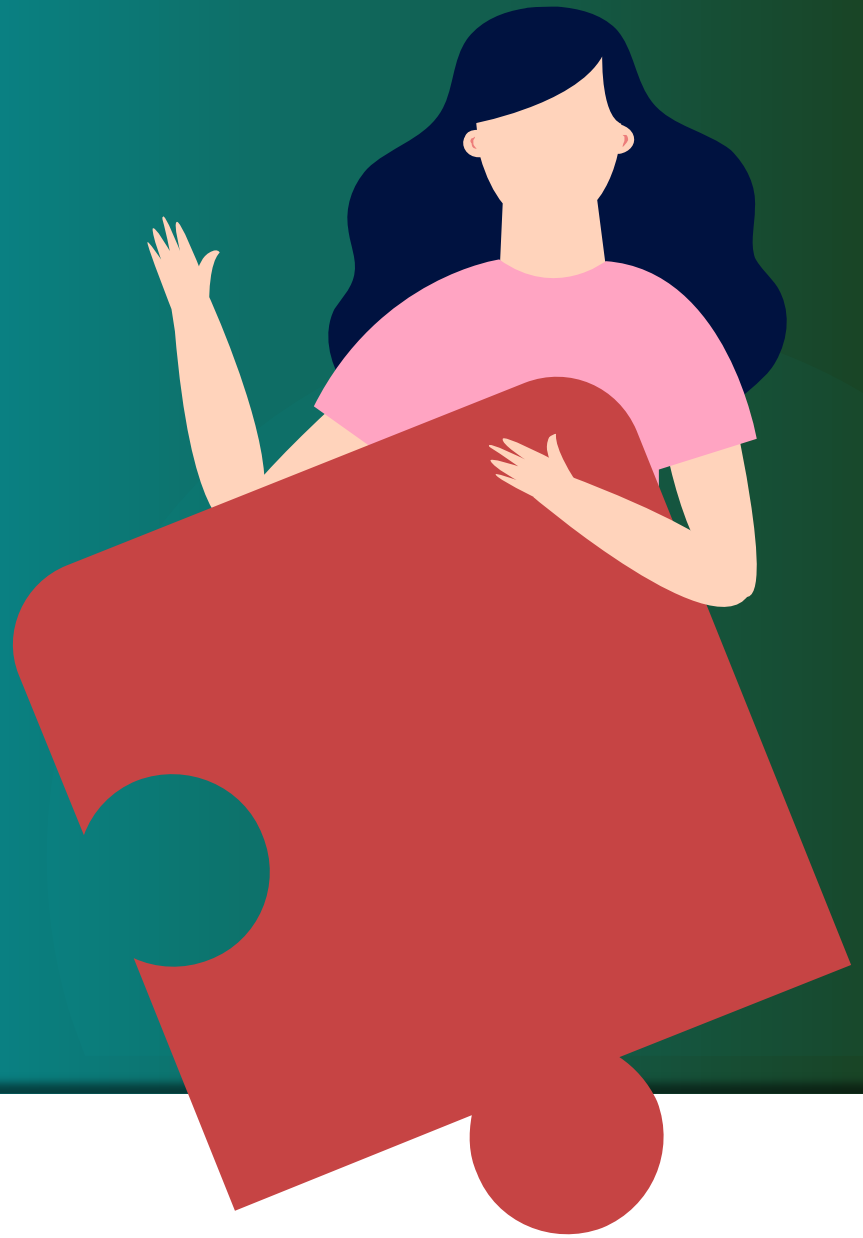


Thiazin - SDS

ELITechGroup

Hematology Reagent B: Thiazin Stain
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 1: Identification

1.1. Identification

Product form	:	Mixture
Product name	:	Hematology Reagent B: Thiazin Stain
Product code	:	SS-071B, SS-071B-EU, or SS-171B2 diluted with methanol

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture	:	Hematology Pro staining reagent

1.3. Details of the supplier of the safety data sheet

ELITechGroup Inc.
370 West 1700 South
Logan, UT 84321 - USA
T +1 (435) 752-6011 - F +1 (435) 752-4127
qara_ebs@elitechgroup.com - www.elitechgroup.com

1.4. Emergency telephone number

Emergency number	:	Contact your distributor or poison control center in your country. InfoTrac Emergency Response: Calls within the USA, phone: 1-800-535-5053. Calls outside the USA, phone: +1 352-323-3500 (call collect) Customer ID: #90104 (NOTE: this number is required when a customer calls into either phone number above).

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Flam. Liq. 3	H226 - Flammable liquid and vapor
Acute Tox. 3 (Oral)	H301 - Toxic if swallowed
Acute Tox. 3 (Dermal)	H311 - Toxic in contact with skin
Repr. 1B	H360 - May damage fertility or the unborn child
STOT SE 1	H370 - Causes damage to organs (liver, kidneys, central nervous system, optic nerve) (oral, Dermal)

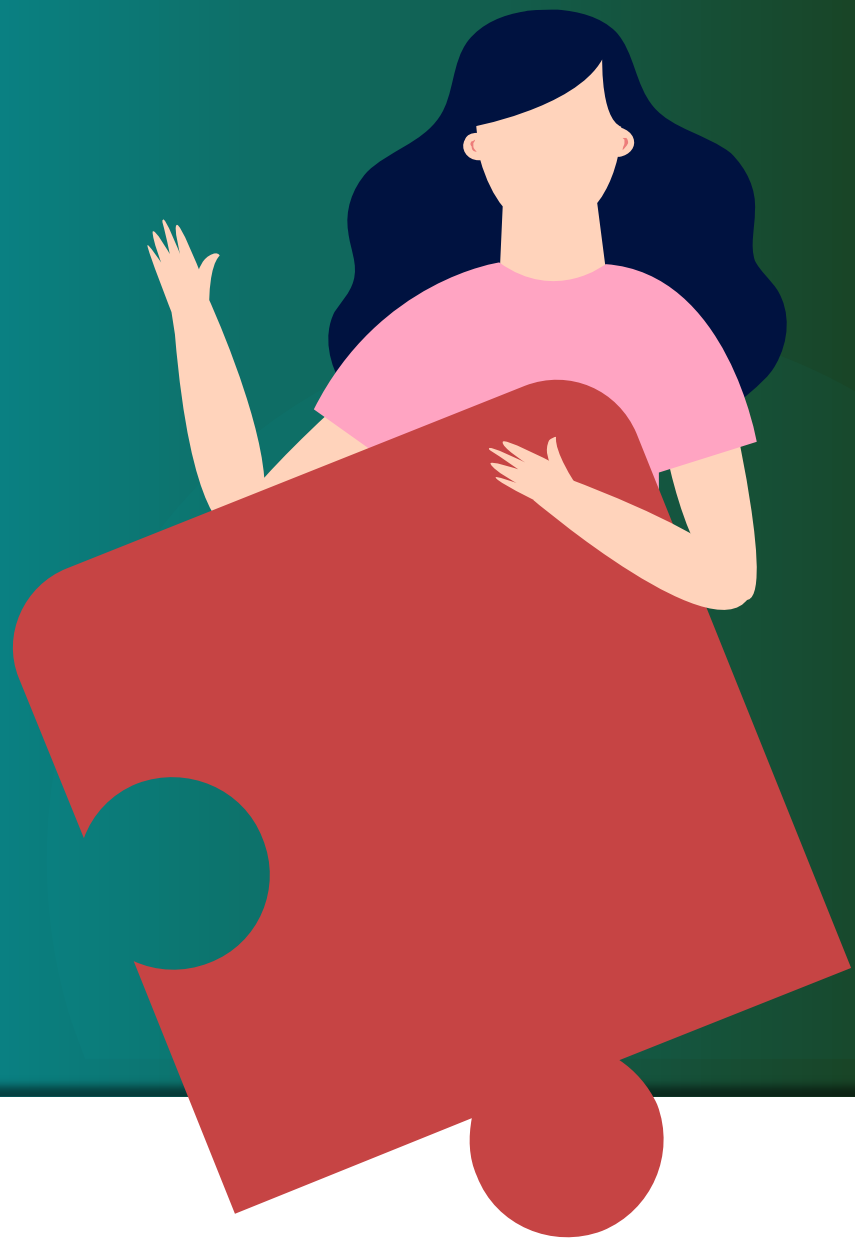
Full text of H- and EUH-statements: see section 16

2.2. Label elements

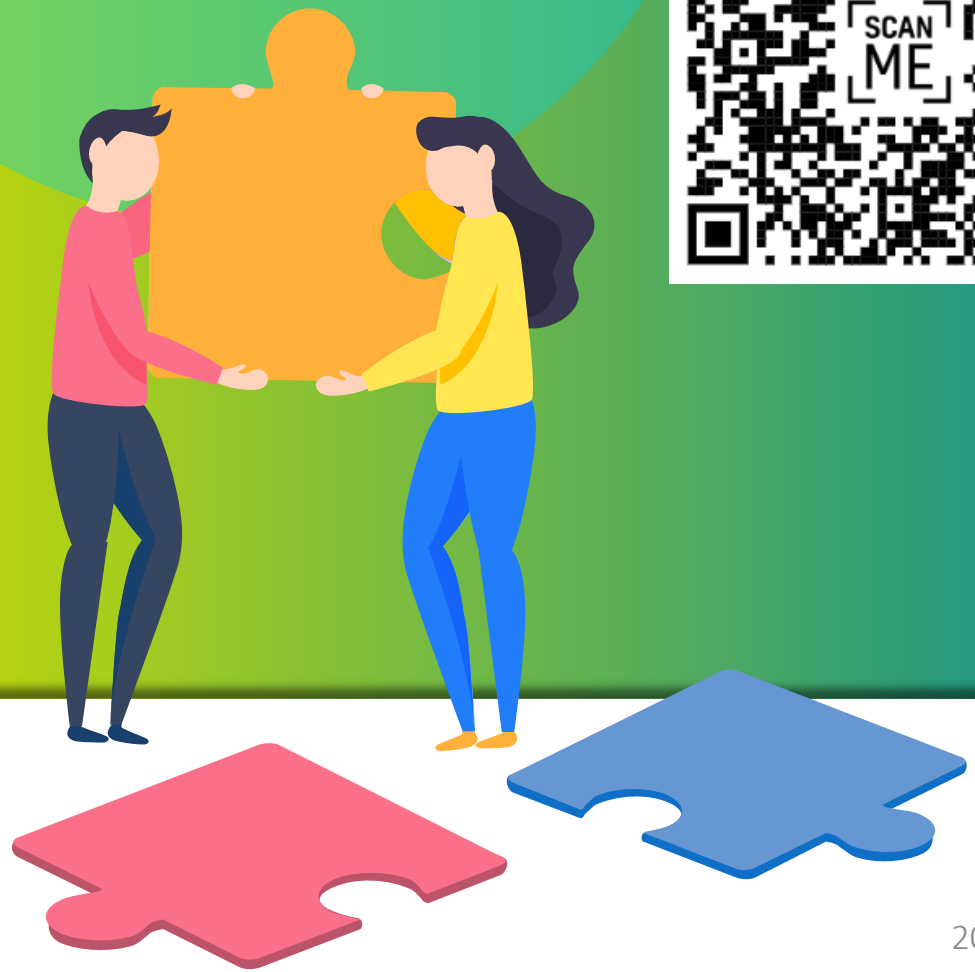
GHS US labeling

Hazard pictograms (GHS US) :

Signal word (GHS US)	:	Danger
Hazard statements (GHS US)	:	H226 - Flammable liquid and vapor H301+H311 - Toxic if swallowed or in contact with skin H360 - May damage fertility or the unborn child H370 - Causes damage to organs (liver, kidneys, central nervous system, optic nerve) (oral, Dermal)
Precautionary statements (GHS US)	:	P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233 - Keep container tightly closed. P243 - Take precautionary measures against static discharge. P260 - Do not breathe mist, spray, vapors. P264 - Wash hands thoroughly after handling P270 - Do not eat, drink or smoke when using this product. P271 - Use only outdoors or in a well-ventilated area. P280 - Wear protective gloves, protective clothing, eye protection, face protection. P302+P352 - If on skin: Wash with plenty of soap and water. P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing.



Reference Guide



California Waste Critieria (non-RCRA)			
Corrosivity - solids (1:1 with water)		≤ 2 or ≥ 12.5	
METHOD:		**9045D**	
Substance	***10x rule***	***STLC (mg/L)***	***TTLC (mg/Kg)***
Antimony	*150*	15	500
Arsenic	*50*	5	500
Barium†	*1,000*	100	10,000
Beryllium	*8*	0.75	75
Cadmium	*10*	1	100
Chromium VI	*50*	5	500
Chromium, total	*50*	5 (560)‡	2,500
Cobalt	*800*	80	8,000
Copper	*250*	25	2,500
Lead	*50*	5	1,000
Molybdenum††	*3,500*	350	3,500
Nickel	*200*	20	2,000
Selenium	*10*	1	100
Silver	*50*	5	500
Thallium	*70*	7	700
Vanadium	*240*	24	2,400
Zinc	*2,500*	250	5,000
METHOD:	-	**WET / 6010B**	**6010B**
Mercury	*2*	0.2	20
METHOD:	-	**WET / 7470A/1B**	**7470A/1B**
Trichloroethylene	*2,040*	204	2,040
METHOD:	-	**WET / 8260B**	**8260B**
Aldrin	*1*	0.14	1.4
Chlordane	*3*	0.25	2.5
DDT, DDE, DDD	*1*	0.1	1
Dieldrin	*8*	0.8	8
Endrin	*0*	0.02	0.2
Heptachlor	*5*	0.47	4.7
Kepone	*21*	2.1	21
Methoxychlor	*100*	10	100
Mirex	*21*	2.1	21
Pentachlorophenol	*17*	1.7	17
Toxaphene	*5*	0.5	5
METHOD:	-	**WET / 8270C**	**8270C**
PCB	*50*	5	50
METHOD:	-	**WET / 8082**	**8082**
Dioxin	*0*	0.001	0.01
METHOD:	-	**WET / 8280A**	**8280A**
Fluoride salts	*1,800*	180	18,000
METHOD:	-	**WET / 300.1**	**300.1**
Asbestos‡‡		≥ 1%	
Acute Oral LD_{50}		< 2,500 mg/Kg	
Acute Dermal LD_{50}		< 4,300 mg/Kg	
Acute Inhalation LD_{50}		< 10,000 ppm	
Acute Aquatic 96-hour LC_{50}		< 500 mg/L	
Used Oil		Any spent amount (if according to HSC 25250.4)	
METHOD:		**8015M - Oil Range**	

For further guidance regarding choosing the correct method, see SW-846 Chapter 2.

EH 1/24/2014

Federal Waste Critiera (RCRA)		
Ignitability - liquids* (D001)	< 60°C (140°F)	
METHOD:	**1010A (ASTM D 93)**	
Corrosivity - liquids (D002)	≤ 2 or ≥ 12.5	
METHOD:	**9040C or 9045D**	
Reactivity (D003)	cyanides	sulfides
METHOD:	**9010C^x**	**9030B^x**
Substance	***20x rule***	***TCLP (mg/L)***
Arsenic (D004)	*100*	5
Barium† (D005)	*2,000*	100
Cadmium (D006)	*20*	1
Chromium VI (D007)	*100*	5
Lead (D008)	*100*	5
Mercury (D009)	*4*	0.2
Selenium (D010)	*20*	1
Silver (D011)	*100*	5
METHOD:	-	**1311 / 6010B**
Benzene (D018)	*10*	0.5
Carbon Tetrachloride (D019)	*10*	0.5
Chlorobenzene (D021)	*2,000*	100.0
Chloroform (D022)	*120*	6.0
1,4-Dichlorobenzene (D027)	*150*	7.5
1,2-Dichloroethane (D028)	*10*	0.5
1,1-Dichloroethene (D029)	*14*	0.7
Hexachlorobutadiene (D033)	*10*	0.5
Hexachloroethane (D034)	*60*	3.0
Nitrobenzene (D036)	*40*	2.0
Pyridine (D038)	*100*	5.0
Tetrachloroethylene (D039)	*14*	0.7
Trichloroethylene (D040)	*10*	0.5
Vinyl Chloride (D043)	*4*	0.2
METHOD:	-	**1311 / 8260B**

F Listed Hazardous Wastes (spent, non-specific source)

Acetone (F003), Benzene (F005), n-Butanol (F003), Carbon Disulfide (F005), Carbon Tetrachloride (F005), Chlorobenzene (F001), Diethyl Ether (F003), 1,2-Dichlorobenzene (F002), Ethyl Acetate (F003), Ethylbenzene (F003), Isobutanol (F005), Methanol (F003), Methyl Ethyl Ketone (F003), Methyl Isobutyl Ketone (F003), Methylene Chloride (F001), Nitrobenzene (F004), 2-Nitropropane (F005), Pyridine (F005), Tetrachloroethylene (F001), Toluene (F005), 1,1,1-Trichloroethane (F001, F002), 1,1,2-Trichloroethane (F002), Trichloroethylene (F001), Trichlorofluoromethane (F002), Xylene (F003)

METHOD:	**8260B**

NOTES:

(1) Laboratory methods (excluding WET & fluorides) according to USEPA SW-846 protocols. Wastewater methods are not recommended except for fluoride salts and fish bioassay.

(2) For asbestos and elemental metals, the specified concentration limits apply only if the substances are in a friable, powdered or finely divided state.

(3) Do not compare lists based solely on units. Ensure methods are correct. Note: mg/L equals mg/Kg for water only.

** Other than an aqueous solution containing less than 24 percent alcohol by volume.*

^x Cyanide/sulfide methods do not measure reactivity.

† Excludes barium sulfate.

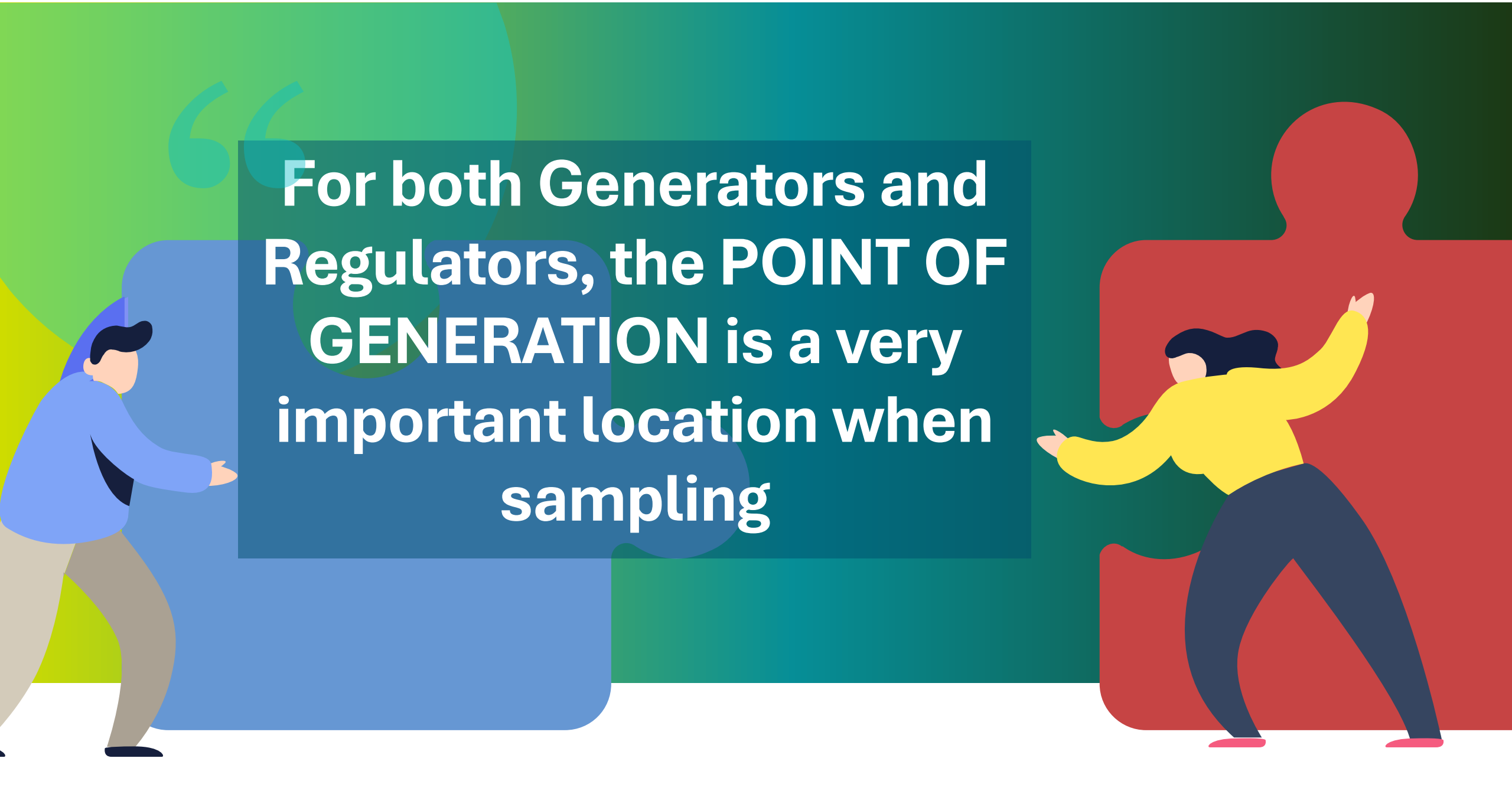
†† Excludes molybdenum disulfide.

‡ Soluble chromium rule.

‡‡ Asbestos includes chrysotile, amosite, crocidolite, tremolite, anthophyllite and actinolite.

Which tests would you request?

Where are you going to collect your sample?


For both Generators and Regulators, the POINT OF GENERATION is a very important location when sampling

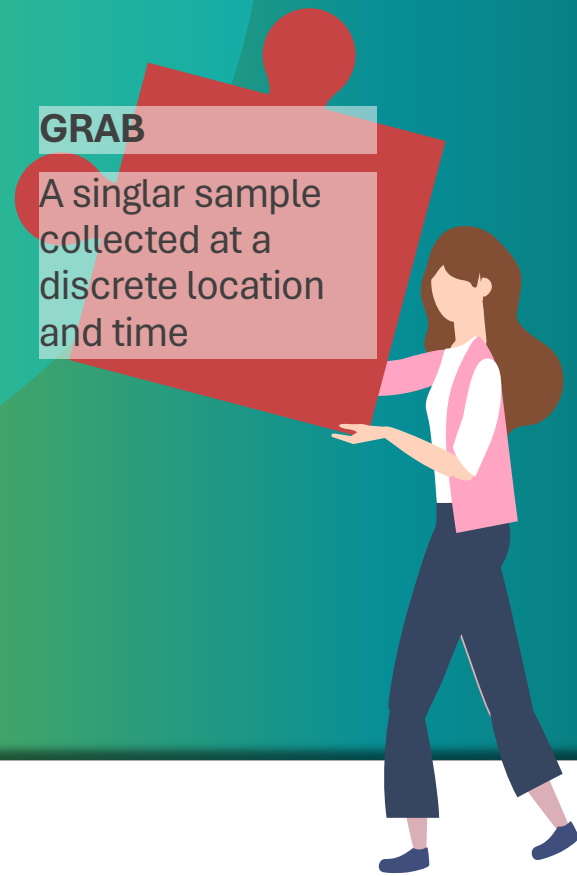
Types of Sampling

PROBABILITY

Random sampling can be simple (singular), systematic (multiple), or stratified (multi-phase)

GRAB

A singlar sample collected at a discrete location and time



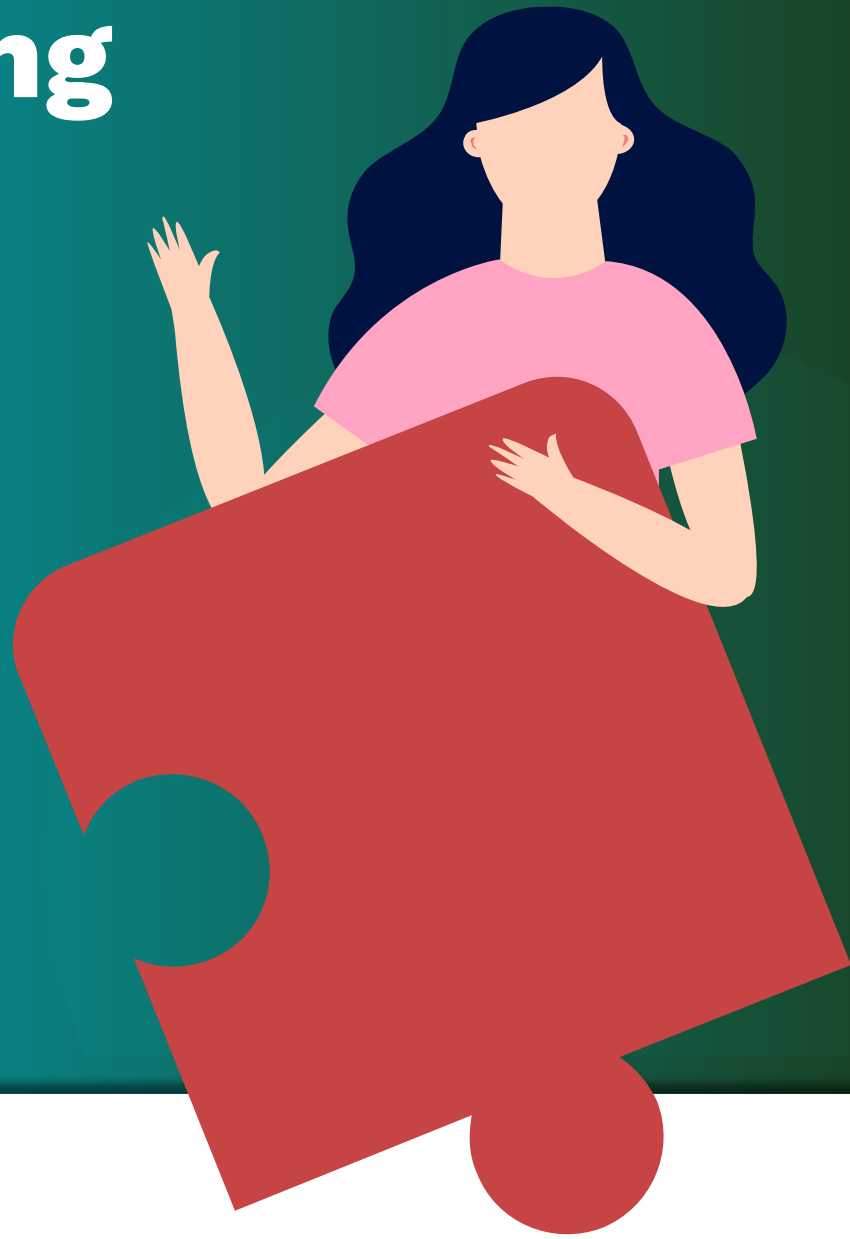
COMPOSITE

Combines multiple individual samples into one “composite” sample for testing

Representative Sampling

Generators are required to conduct waste determinations that draw accurate conclusions about their waste as a whole.

Representative data comes from a sample that can be expected to exhibit the average properties of the entire waste. Statistical analysis of data shows whether the samples taken are truly representative of the waste in total.



Authoritative Sampling

Regulators are not required to conduct representative sampling.

The regulator can collect a grab sample from the point of generation when and where they suspect the sample to be most hazardous.

Question 4:

If the process equipment has 3 different solutions that drain from 3 pipes into one waste container, how many samples would you take?

BEFORE SAMPLING...

Safety 1st

Remember, you are sampling something that is potentially hazardous.

Make a Plan

Be prepared. Plan carefully to avoid mistakes. You won't want to sample twice.

Documentation

Stay organized when sampling and document the details.

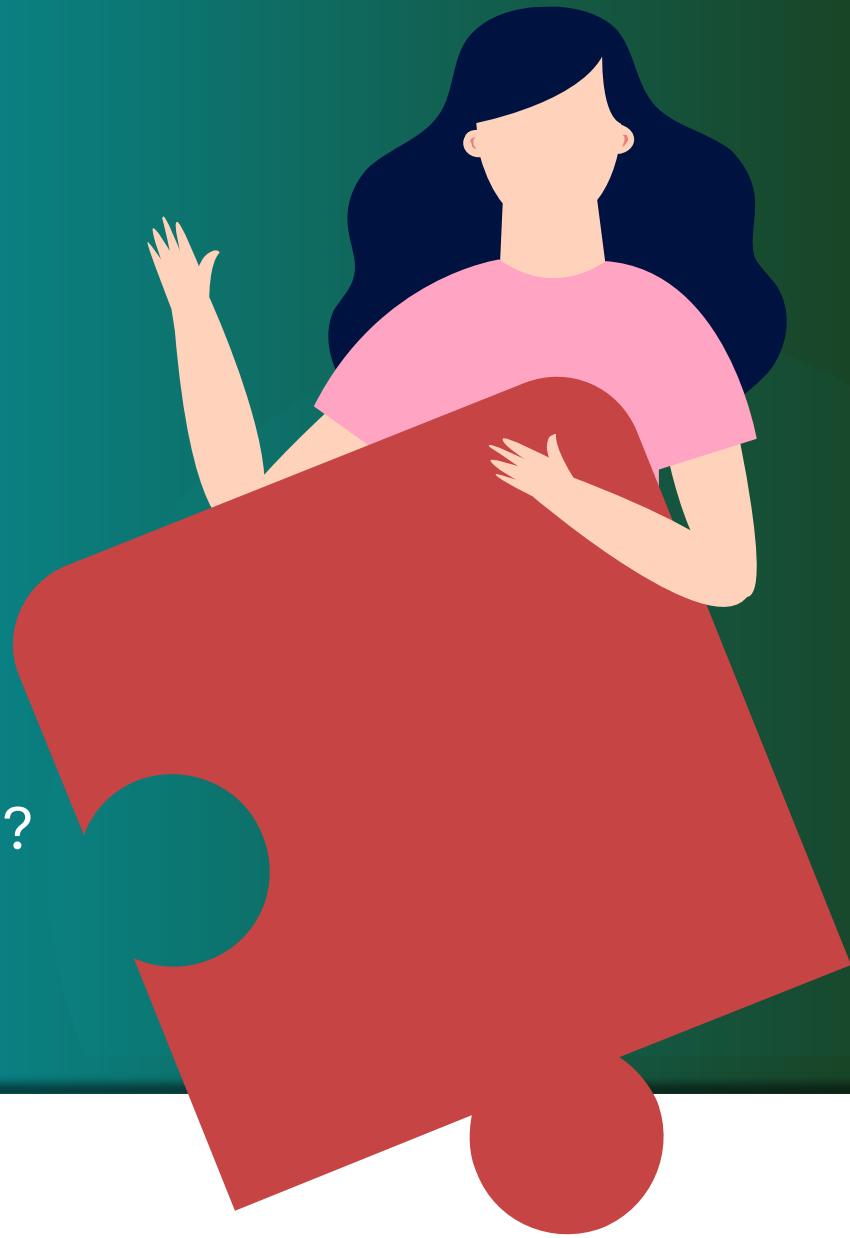
Communicate

Communicate with everyone ahead of time. Set roles and responsibilities.

Safety First

Unless it is time critical, it's best to stop and get a plan together before sampling. **In ANY case, safety should always be your #1 consideration.**

1. What are the **Hazards**?
    - Releases
    - Toxic Vapors, Fumes or Dust
    - Traffic
    - Confined Space
2. What **Personal Protective Equipment** do you need?
3. What are your **Contingency Plans**?



Make a Plan

1. What are you sampling?
2. How many samples are you going to collect?
3. Do you have the right equipment?
4. Which tests are you going to run?
5. Are there any special handling requirements for any of the samples?
6. Will you have any help?
   - ✓ Dirty sampler
   - ✓ Clean sampler
   - ✓ Scribe
7. Who will analyze the samples?

Documentation

If it isn't documented, did it happen? Depending on *why* you are sampling, documentation serves different purposes.

- **Generators:** Written documentation demonstrates a proper and complete waste determination was made.
- **Regulators:** Documentation demonstrates what was sampled and chain of custody was maintained.

Documentation Includes: Photographs; Videos; Chain of Custody, Written Plans, Procedures, Statements, or Reports; etc.

Communication

Even the best laid plans can hit snags. Make sure to communicate with your team and everyone involved so everyone can be prepared and successful

1. Communicate with the **lab** before and after sampling:
    - **BEFORE:** Let them know what you are sampling. Ask if there are any special handling considerations.
    - **AFTER:** Receipt of samples and results of lab analysis
2. Communicate with **your team** before and after sampling:
    - **BEFORE:** Roles and responsibilities
    - **AFTER:** Lessons learned

3 samples x 2 tests:

Flashpoint and Aquatic Tox

County of San Diego

HMD Chain-of-Custody Record

Date 10/17/19 Page 1 of 1

Project/ [redacted]
UPFP#/
Address

Sampler's Signature Arleen Garfield
Sampler's Printed Name Arleen Garfield

SAMPLE LABEL NO.	DATE (of Collection)	TIME	DESCRIPTION OF SAMPLE/ CONTAINER/LOCATION	ANALYSIS REQUESTED: Title 22 Metals (TTLC)	Title 22 Metals (STLC)	pH	Flashpoint/Ignitibility	Other: Aquatic Tox	SAMPLE TYPE: SOLID	LIQUID	MULTI-PHASIC	NO OF CONTAINERS	COMMENTS
11328	10/17/19	12:26PM	#1-Fixative				X	X		X			99.9% methanol MeOH
11329	10/17/19	12:35	#2-Eosin					X		X			
11330	10/17/19	12:40	#3-Thiazine					X		X			
11331	10/17/19	12:29	#1-Fixative				X						99.9% MeOH
11326	10/17/19	12:34	#2-Eosin				X						
15538	10/17/19	12:39	#3-Thiazine				X						

COPY OF LAB RESULTS MUST BE SENT TO:
Dept. of Environmental Health
Hazardous Materials Division
P.O. Box 129261
San Diego, CA 92112-9261

HMD LAB CUSTODIAN (PRINT NAME)	DATE IN:	TIME IN:	HMD LAB CUSTODIAN (PRINT NAME)	DATE IN:	TIME IN:	HMD LAB CUSTODIAN (PRINT NAME)	DATE IN:	TIME IN:
RON ISIP	10-17-19	330 pm						
HMD LAB CUSTODIAN (PRINT NAME)	**DATE OUT:**	**TIME OUT:**	**HMD LAB CUSTODIAN (PRINT NAME)**	**DATE OUT:**	**TIME OUT:**	**HMD LAB CUSTODIAN (PRINT NAME)**	**DATE OUT:**	**TIME OUT:**
RON ISIP	10-21-19	1035 AM						

① RELINQUISHED BY	Date	② RELINQUISHED BY	Date	③ RELINQUISHED BY	Date
Signature: Arleen Garfield	10-17-19	Signature: RON ISIP	10-21-19	Signature	
Printed Name: COSD-HMD	Time: 328pm	Printed Name: COSD-HMD	Time: 1039am	Printed Name	Time
Company		Company		Company	
RECEIVED BY: Signature: RON ISIP	Date: 10-17-19	RECEIVED BY: Signature: FRANCISCO	Date: 10-21-19	RECEIVED BY: Signature	Date
Printed Name: COSD-HMD	Time: 330pm	Printed Name: FRANCISCO	Time: 10:40	Printed Name	Time
Company		Company		Company	

Sample Conditions
Received On Ice Yes/No
Tape Seal Intact Yes/No
Special Shipment/Handling or Storage Requirements:
Split Sample Provided To: Declined per [redacted]

DEH:HM-941 (Rev. 7/12)

County of San Diego
Department of Environmental Health

CONGRATULATIONS!

You've collected your sample and sent it to the lab. The lab has completed your requested tests and sent you the analytical report....

Aquatic Testing Laboratories

FATHEAD MINNOW HAZARDOUS WASTE DEFINITIVE BIOASSAY

Lab No.: A-19082113-001
Client/ID: TestAmerica 440-248291-2

TEST SUMMARY

Species: ***Pimephales promelas***.
Regulations: CCR Title 22.
Fish weight (gm): av: 0.38 ; min. 0.30; max: 0.44 .
Test chamber volume: 10 liters.
Temperature: 20 +/- 2°C.
Aeration: Single bubble through narrow bore tube if DO <5.5 mg/L.
Number of replicates: 2.
Dilution water: Soft reconstituted water (40-48 mg/l $CaCO_3$).
Extraction method: mechanical shaking.

Source: Thomas Fish.
Ref. Tox. No.: RT-190823.
Test Protocol: California F&G/DHS 1988.
Endpoints: LC50 at 96 hrs.
Test type: Static.
Feeding: None.
Number of fish per chamber: 10 .
Photoperiod: 16/8 hrs light/dark.

TEST DATA

	INITIAL			24 Hr				48 Hr				72 Hr				96 Hr			
Date/Time:	8-22-19 1030			8-24-19 1030				8-25-19 1020				8-26-19 1045				8-27-19 1030			
Analyst:	J			J				J				Jm				J			
	°C	DO	pH	°C	DO	pH	# D	°C	DO	pH	# D	°C	DO	pH	# D	°C	DO	pH	# D
Control A	20.2	8.1	7.7	20.1	7.5	7.6	0	20.3	5.9	7.8	0	20.4	6.0*	7.6	0	20.3	7.4	7.7	0
Control B	20.1	8.3	7.8	20.2	7.3	7.6	0	20.4	6.3	7.7	0	20.3	5.4*	7.5	0	20.2	7.1	7.6	0
10 mg/l A	20.2	8.3	7.8	20.3	7.3	7.5	0	20.3	6.7	7.7	0	20.4	5.6*	7.6	0	20.3	7.0	7.5	0
10 mg/l B	20.1	8.3	7.8	20.3	7.4	7.5	0	20.3	7.1	7.6	0	20.3	5.3*	7.5	0	20.2	7.1	7.7	0
25 mg/l A	20.2	8.2	7.8	20.2	7.4	7.5	0	20.3	6.1	7.7	0	20.3	5.6*	7.6	0	20.3	7.0	7.7	0
25 mg/l B	20.2	8.3	7.8	20.2	7.5	7.5	0	20.2	6.2	7.7	0	20.4	5.8*	7.5	0	20.2	7.1	7.6	0
50 mg/l A	20.1	8.1	7.8	20.2	7.4	7.5	0	20.3	6.3	7.6	0	20.3	5.4*	7.5	0	20.3	7.0	7.6	0
50 mg/l B	20.1	8.3	7.8	20.3	7.4	7.5	0	20.2	6.1	7.5	0	20.3	5.3*	7.5	0	20.1	7.1	7.6	0
75 mg/l A	20.1	8.3	7.8	20.4	7.3	7.7	3	20.3	6.2	7.7	1	20.2	5.6*	7.5	1	20.2	7.2	7.6	1
75 mg/l B	20.2	8.4	7.8	20.3	7.4	7.1	4	20.2	6.3	7.6	1	20.1	5.5*	7.5	1	20.3	7.0	7.6	2
100 mg/l A	20.1	8.2	7.8	20.1	7.4	7.5	10	-	-	-	-	-	-	-	-	-	-	-	-
100 mg/l B	20.2	8.1	7.8	20.1	7.4	7.5	10	-	-	-	-	-	-	-	-	-	-	-	-

Comments: Dissolved Oxygen (DO) readings in mg/l O_2

Test Aeration: None NA .
* Aerated ✓ . (Minimum needed to maintain DO > 5.5 mg/L through narrow-bore glass tube at < 100 bubbles per minute)

Client Sample Results

Client: County of San Diego [redacted] Job ID: 440-252859-1

Client Sample ID: 11331 — **Lab Sample ID: 440-252859-4**
Date Collected: 10/17/19 12:29 — Matrix: Waste
Date Received: 10/21/19 12:50

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	<74.7				Degrees F			10/21/19 16:19	1

Client Sample ID: 11326 — **Lab Sample ID: 440-252859-5**
Date Collected: 10/17/19 12:34 — Matrix: Waste
Date Received: 10/21/19 12:50

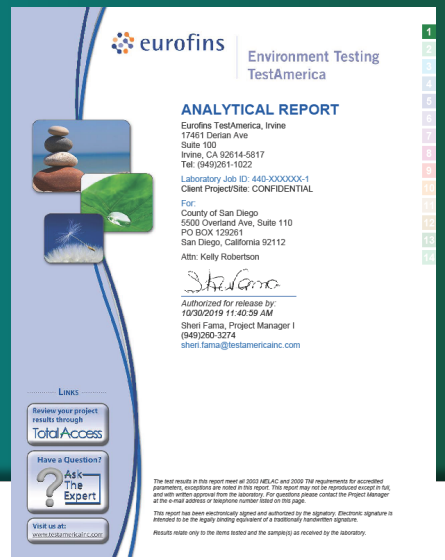
General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	157.1				Degrees F			10/21/19 16:19	1

Client Sample ID: 15538 — **Lab Sample ID: 440-252859-6**
Date Collected: 10/17/19 12:39 — Matrix: Waste
Date Received: 10/21/19 12:50

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	>201				Degrees F			10/21/19 16:19	1


eurofins Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

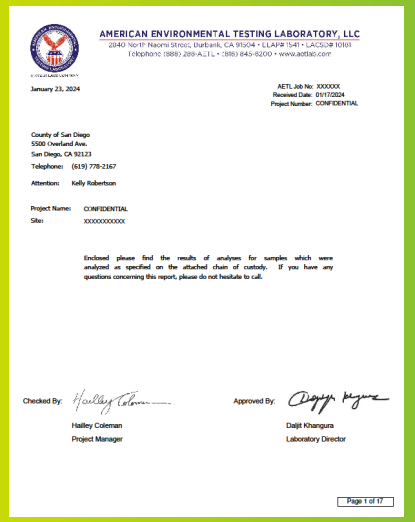
Laboratory Job ID: 440-XXXXXX-1
Client Project/Site: CONFIDENTIAL

For:
County of San Diego
5500 Overland Ave, Suite 110
PO BOX 129261
San Diego, California 92112

Attn: Kelly Robertson

Authorized for release by:
10/30/2019 11:40:59 AM
Sheri Fama, Project Manager I
(949)260-3274
sheri.fama@testamericainc.com

Links
Review your project results through TotalAccess
Have a Question? Ask The Expert
Visit us at: www.testamericainc.com



AMERICAN ENVIRONMENTAL TESTING LABORATORY, LLC
2840 North Naomi Street, Burbank, CA 91504 • ELAP# 1541 • LACSD# 10101
Telephone: (888) 289-ALTL • (818) 845-8200 • www.aetlab.com

January 23, 2024

AETL Job No: XXXXXX
Received Date: 01/17/2024
Project Number: CONFIDENTIAL

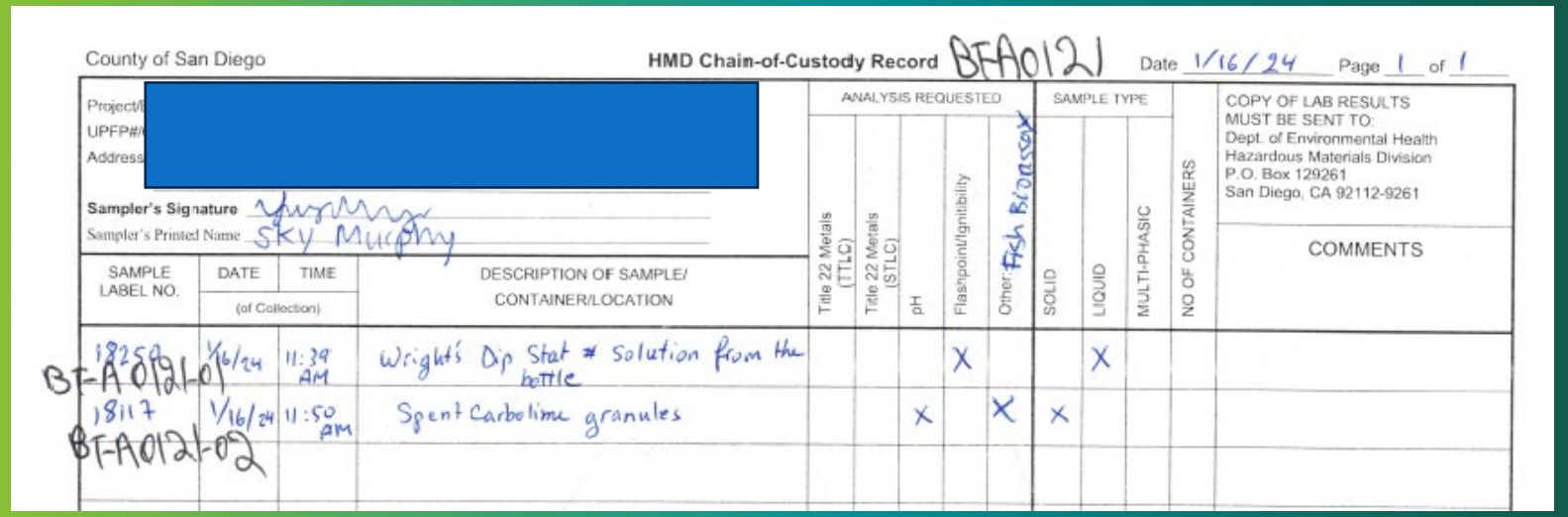
County of San Diego
5500 Overland Ave.
San Diego, CA 92123
Telephone: (619) 778-2167
Attention: Kelly Robertson

Project Name: CONFIDENTIAL
Site: XXXXXXXXXX

Enclosed please find the results of analyses for samples which were analyzed as specified on the attached chain of custody. If you have any questions concerning this report, please do not hesitate to call.

Checked By: Hailley Coleman — Hailley Coleman, Project Manager
Approved By: Daljit Khangura — Daljit Khangura, Laboratory Director

Page 1 of 17



County of San Diego — HMD Chain-of-Custody Record BFA0121 — Date 1/16/24 — Page 1 of 1

Project/
UPFP#/
Address [redacted]

Sampler's Signature
Sampler's Printed Name Sky Murphy

ANALYSIS REQUESTED: Title 22 Metals (TTLC); Title 22 Metals (STLC); pH; Flashpoint/Ignitibility; Other: Fish Bioassay
SAMPLE TYPE: SOLID; LIQUID; MULTI-PHASIC
NO OF CONTAINERS

COPY OF LAB RESULTS MUST BE SENT TO:
Dept. of Environmental Health
Hazardous Materials Division
P.O. Box 129261
San Diego, CA 92112-9261

COMMENTS

SAMPLE LABEL NO.	DATE (of Collection)	TIME	DESCRIPTION OF SAMPLE/ CONTAINER/LOCATION	Title 22 Metals (TTLC)	Title 22 Metals (STLC)	pH	Flashpoint/Ignitibility	Other: Fish Bioassay	SOLID	LIQUID	MULTI-PHASIC	NO OF CONTAINERS
18250 BFA0121-01	1/16/24	11:39 AM	Wright's Dip Stat # solution from the bottle				X			X		
18117 BFA0121-02	1/16/24	11:50 AM	Spent Carbolime granules			X		X	X			

Positive Hits Summary

Lab ID	Client ID				Sampled
BFA0121-01	18250				01/16/2024 11:39
Method	Analyte	Result	Qualifier	Unit	Analyzed
EPA 1010	Flashpoint	76.0		Deg F	01/22/2024 10:30

Lab ID	Client ID				Sampled
BFA0121-02	18117				01/16/2024 11:50
Method	Analyte	Result	Qualifier	Unit	Analyzed
EPA 9045C	pH	13.0	HT-pH	pH unit	01/18/2024 12:45
EPA 9045C	Temperature	20.4		°C	01/18/2024 12:45

Result Summary:

Sample ID.	Results
BFA0121-02	≥40% dead in 750 mg/l

Question 5:

Which violations apply?

Quality Assurance (QA)

- Legally Defensible Data
- Adherence to methods and/or regulations
- Technically Defensible Data
- Support by controls & QC samples
- Consistent known quality

Quality Control (QC)

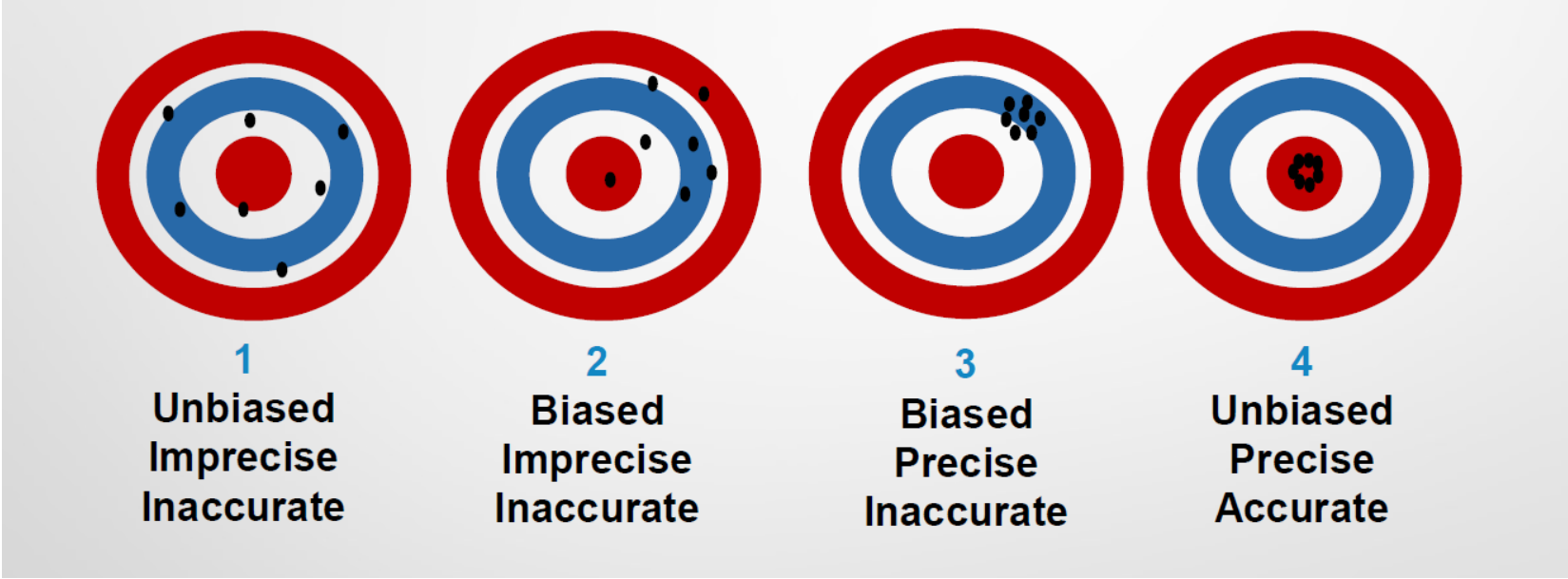
QC processes and activities focus on elimination or minimization of items such as:

- False Positives
- False Negatives
- Mis-quantitations

Data Quality

Sample results are only as good as the quality of the data

Data quality are supported by quality control samples that evaluate bias, precision, and accuracy



Why Data Quality Matters

Qualifiers

GC/MS VOA

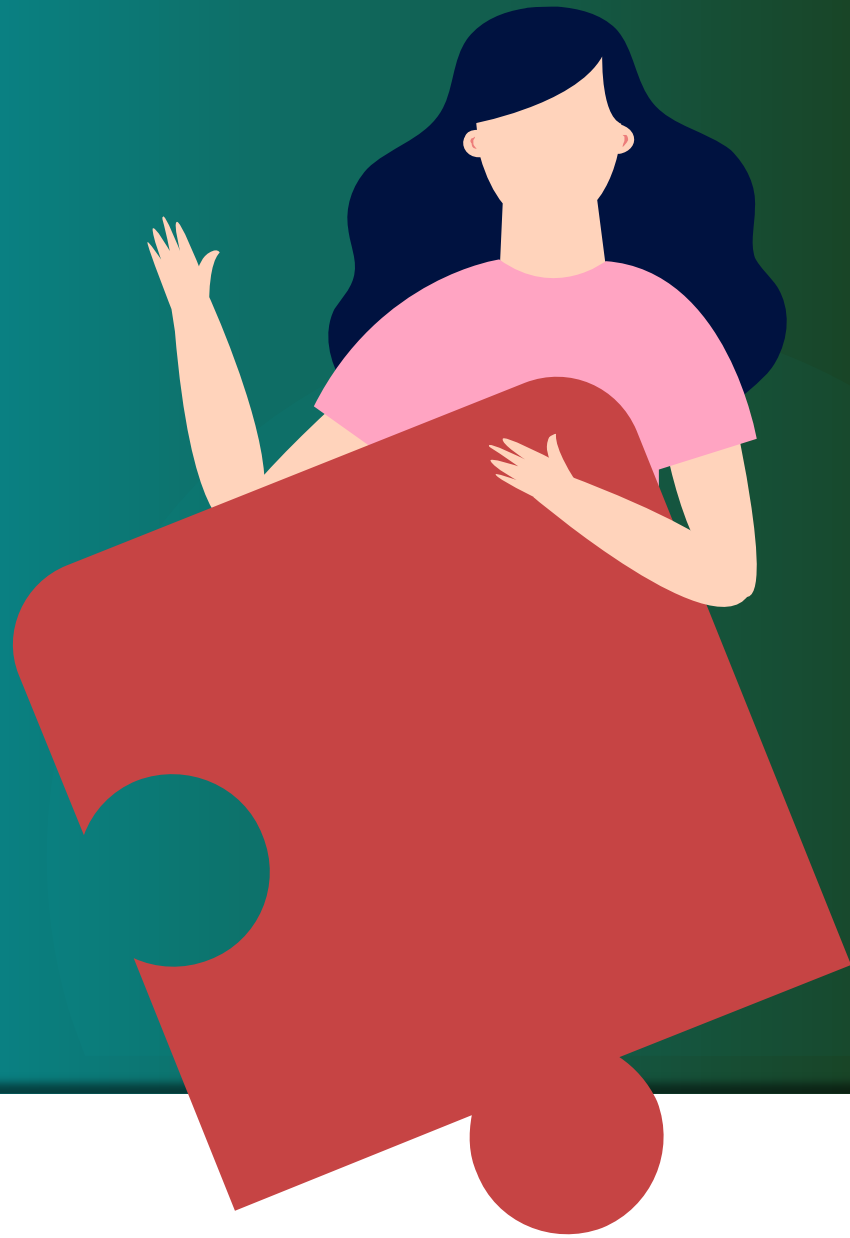
Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Common Report Flags

- **“U”** or **“ND”**: compound not detected
- **“J”**: estimated value
- **“B”**: compound detected in blank
- **“S, L, M”**: Spike Recovery Issue
- **“R”**: RPD recovery issue
- **“H”** Hold time exceeded
- **“D”**: Dilution performed



Key Points

- Check the SDS for clues
- Safety First
- Point of Generation is very important
- QA/QC matters

QUESTIONS?

Join me
for Part 2
@ 1pm

Thank You for Attending

Arleen Gurfield, MPH, REHS
Supervising Environmental Health Specialist
San Diego County CUPA
Email: arleen.gurfield@sdcounty.ca.gov
Phone: 858-229-1135

26th California Unified Program Annual Training Conference
February 26-29, 2024