



Oilfield Waste Characterization and Classification in Western Canada

SHERRY KENNEWAY, B.SC.

CO CHAIR CAPP WASTE MANAGEMENT COMMITTEE

REGULATORY SPECIALIST, CANADIAN NATURAL RESOURCES

Agenda

- ▶ Scope (And Limitations)
- ▶ Defining Waste
- ▶ Characterization
- ▶ Classification
- ▶ Different Places Different Requirements
- ▶ Roles and Responsibilities
- ▶ Documentation
- ▶ Key Messages

Scope and Limitations

- ▶ I only play an expert on this podium
- ▶ Lots of good resources available
 - ▶ IRP 28: Drilling and Completions Waste Management
 - ▶ Canadian Association of Petroleum Producers (CAPP) Waste Profile Sheets
 - ▶ Alberta Users Guide for Waste Managers
 - ▶ Regulators are friends
 - ▶ The internet
 - ▶ Field staff- no dumb questions
 - ▶ Consultants
- ▶ Nothing presented here replaces Local Regulations (don't take my word for it)

What is Waste

- ▶ Waste - is an unwanted substance or mixture of substances
- ▶ Oilfield Waste vs Industrial Waste
 - ▶ Oilfield waste is directly generated through oil and gas exploration and production activities.
- ▶ Is it Hazardous?
 - ▶ Dangerous / Hazardous Waste - is an unwanted substance or mixture of substances that exhibits dangerous or hazardous properties.
 - ▶ Non
 - ▶ Dangerous / Non-Hazardous Waste - an unwanted substance or mixture of substances that does not exhibit dangerous or hazardous properties.
- ▶ Why are we asking the question?

Characterization

Is the assessment of the physical, chemical and toxicological characteristics of a substance

Where do we get characterization information?

- ▶ Safety Data Sheet (SDS) information/ Waste Profile Sheets
- ▶ Historical /Operational Knowledge of the Substance (and the processes that generated it)
- ▶ Sample and test the material

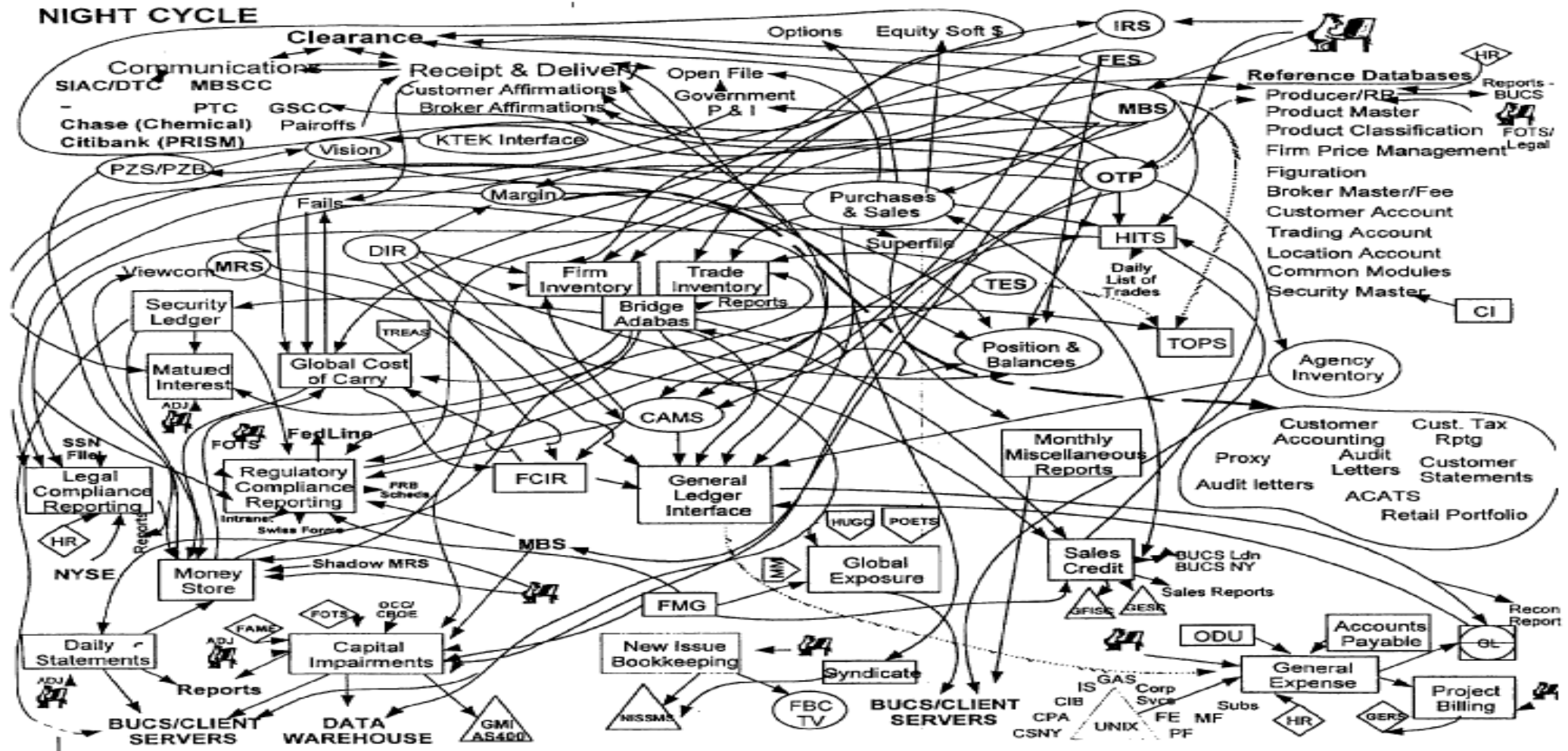
Properties of a HAZ/DOW Waste

- ▶ Flammability (Flashpoint)
- ▶ Corrosivity (pH)
- ▶ Spontaneous combustion potential
- ▶ Oxidizing potential
- ▶ Toxicity
- ▶ Water incompatibility
- ▶ Leachable components
- ▶ Waste listed specifically in regulations

Classification

- ▶ A review of the characterization data to properly to determine if:
 - ▶ The waste is hazardous (dangerous),
 - ▶ The waste is a dangerous good under Transportation of Dangerous Goods Regulations (TDGR),
 - ▶ What disposal options are appropriate,
 - ▶ What types of hazards might be present that handlers of waste need to be aware of
 - ▶ Shipping considerations
 - ▶ PPE
 - ▶ Mixing of wastes

Is it Hazardous or not?



Classification Tips For Common Waste Streams (not a cheat sheet)

Waste	Classification	AER Waste Code
Drilling Waste Gel Chem	NONDOW/ NON HAZ	DRWSGC
Drilling Waste Hydrocarbon	NONDOW/ NON HAZ in AB maybe HAZ in BC	DRWSHC
Frac Flow Back Water Based	NONDOW/NON HAZ in AB (*Testing Req)	FRFLDW
Crude Oil Emulsion	Depends	COEMUL
Hydro Vac Material	What is the Contaminant?	HYDV_
Contaminated Soil	What is the Contaminant?	SOIL_
Petroleum Crude	Dangerous Good	Trick question not a waste

Mixed Waste Loads

Mixing of waste can change classification





Location, Location, Location

DIFFERENT JURISDICTIONS DIFFERENT RULES

Alberta

- ▶ Dangerous Oilfield Waste vs Non Dangerous Oilfield Waste
- ▶ Alberta Environment and Parks (AEP)
 - ▶ Environmental Protection and Enhancement Act
 - ▶ Activities Designation Regulations
 - ▶ Waste Control Regulations
- ▶ Alberta Energy Regulator (AER)
 - ▶ Directive 058: Waste Management Requirements for the Upstream Petroleum Industry
 - ▶ Waste Codes Appendix 2
 - ▶ Directive 050: Drilling Waste Management for the Upstream Petroleum Industry
 - ▶ Directive 055: Storage Requirements for the Upstream Petroleum Industry
 - ▶ Geothermal and Brine-Hosted Mineral Resource Development

More Alberta

- ▶ AER Requirements
 - ▶ Alberta Oilfield Waste Form (Manifest) for all DOW shipments
 - ▶ An appropriate AER Waste Code (Appendix 2, D058) needs to be used to track the waste
- ▶ **DOW/NONDOW classification** and **AER waste code** must be clearly written on all shipping documents.

*Secure Energy waste facilities will **not accept** loads without complete documentation.*

B.C.

- ▶ Ministry of Environment and Climate Change Strategy (ENV)
 - ▶ Hazardous Waste Definition different from AB
 - ▶ 3% oil content
- ▶ Hazardous Waste/Site Registration required for hazardous waste
- ▶ Manifesting of Haz Waste
 - ▶ Federal Movement Document with BC tracking number
- ▶ BC Oil and Gas Commission (OGC)
 - ▶ Oil and Gas Handbook
 - ▶ Oil and Gas Activity Manual

Saskatchewan

- ▶ Saskatchewan Ministry of Environment (SME)
 - ▶ The Environmental Management and Protection Act
 - ▶ Manifesting of hazardous waste shipped **within** Saskatchewan is not required by Saskatchewan Ministry of Environment.
 - ▶ Shipping documentation still required (TDG Shipping documents, truck tickets)
 - ▶ Manifesting (Federal Movement Document) is required by the federal government for hazardous waste and hazardous recyclable material **shipped into or out of** the province.
- ▶ Ministry of Energy and Resources (MER)
 - ▶ Saskatchewan GL9901 Drilling Waste Management Guideline

Federal Requirements

- ▶ Cross-border Movement of Hazardous Waste and Hazardous Recyclable Material Regulations
- ▶ Transportation of Dangerous Goods Regulations (TDGR)
 - ▶ Transport Canada has jurisdiction over the transportation of dangerous goods in Canada
 - ▶ The TDGR requires a **TDG shipping document** to track the movement of dangerous goods.
 - ▶ Dangerous goods that are no longer used for their original purposes are considered hazardous waste,



Roles and Responsibilities

EVERYONE IS RESPONSIBLE FOR UNDERSTANDING THE HAZARDS
ASSOCIATED WITH THE WASTE STREAM BEING MANAGED

Generator/ Consignor Responsibilities

Generator is the company that generated the waste

Responsibilities

- ▶ Characterizing and classifying waste.
- ▶ Determining appropriate waste management options.
- ▶ Preparing accurate and complete shipping documents.
 - ▶ What is the waste?
 - ▶ Where did it come from?
 - ▶ How should we transport it?
 - ▶ Where can it go?



Transporter/Carrier Responsibilities

Transporter is the trucking company

Responsibilities

- ▶ Ensuring they have the proper shipping documents.
- ▶ Ensuring that the waste is transported in the appropriate containment.
- ▶ Monitoring fluid levels during the transfer to prevent spills.



Truck Drivers are not responsible for determining waste characterization/classification

Receiver/ Consignee Responsibilities

Receiver is the facility where the waste is transported
(Landfill/ Oilfield Waste Processing Facility/ Disposal Well Facility)

Responsibilities

- ▶ Knowing and Communicating the capabilities and limitations of their treatment and disposal facilities.
- ▶ Ensuring that only waste the facility is approved to handle is received.
- ▶ Updating the shipping document as per their role in the process.



Consultants

HOW DO THEY FIT IN?



Documentation

DIDN'T HAPPEN IF YOU DIDN'T DOCUMENT IT

Shipping Documents

- ▶ Documents are evidence you can use to support your due diligence
- ▶ Shipping Documents required by legislation
- ▶ Waste Manifest
- ▶ Truck Ticket
- ▶ Waste Docket
- ▶ Recycling Docket
- ▶ Bill of Lading

Alberta Oilfield Waste Form

Alberta Energy Regulator		Generator completes Part A of the manifest		Alberta Oilfield Waste Form				Form No. Sample Manifest									
A) GENERATOR (CONSIGNOR)				B) TRANSPORTER (CARRIER)				C) RECEIVER (CONSIGNEE)									
COMPANY NAME Canadian Natural Resources Limited				COMPANY NAME Xtreme Oilfield Technology				COMPANY NAME Pure Environmental									
ADDRESS 2100, 855 - 2 Street S.W.				ADDRESS P.O. Box 1476				ADDRESS 850, 400 - 3rd Ave. S.W.									
CITY Calgary				CITY St. Paul				CITY Bonnyville									
PROVINCE AB				PROVINCE AB				PROVINCE AB									
POSTAL CODE T2P 4J8				POSTAL CODE T0A 3A0				POSTAL CODE T0A 0B0									
SOURCE SITE LOCATION (SURFACE LOCATION) 05-32-068-04 W4				DATE 2022-04-18				UNIT NUMBER 123									
LICENCE TYPE (W.P.F.) Well				TELEPHONE 780-645-5979				FAX 									
LICENCE NUMBER 0492134				Certification - I declare that I have received wastes as offered by the Generator in PART A for delivery to the Intended Receiver and that the information contained in PART B is correct and complete.													
INTENDED RECEIVER Pure Environmental				NAME (PRINT) Joe Schmo				SIGNATURE 									
RECEIVING SITE LOCATION Pure Environmental Fort Kent 09-14-063-04 W4				RECEIVING SITE LOCATION Pure Environmental Fort Kent 09-14-063-04 W4				OPERATOR/BA CODE A7LH									
WASTE CODE	D (DOW) or N (NON-DOW)	UN NUMBER	TDG Shipping Name (DOW)/Common Name (NON-DOW)	CLASS	PACKING GROUP	QUANTITY SHIPPED	UNITS	PACKAGING NO.	PACKAGING CODE	HANDLING CODE	QUANTITY RECEIVED	UNITS	OIL %	WATER %	SOLID %	HANDLING CODE	TRANS. DECON.
WWOFLD	D	2924	MIXED OILFIELD PRODUCTION FLUIDS. TREAT AS FLAMMABLE LIQUID, CORROSIVE, N.O.S., (Well Workover Fluids) - MAY RELEASE HAZARDOUS VAPOUR	3 (8)	III	20	M3	1	01	03							
SPECIAL HANDLING/EMERGENCY INSTRUCTIONS																	
IF HANDLING CODE "01", "02" OR "21" SPECIFY																	
DATE SHIPPED 2022-04-18				TIME SHIPPED 10:51 AM				DATE RECEIVED				TIME RECEIVED					
Certification - I declare that the information in PART A is correct and complete. I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the Transportation of Dangerous Goods Regulations.										TELEPHONE/CELLULAR 4038158420							
NAME OF AUTHORIZED PERSON David Hart										24H EMERGENCY NUMBER 1-888-878-3700							
COMMENTS UWI 24/05-32-068-04W4/00										IDENTIFY DISCREPANCIES BETWEEN WASTE RECEIVED AND DETAILS LISTED IN THE COMMENTS SECTION.							
TRUCK TICKET NUMBER 136461										SOURCE / TANK OR VESSEL NUMBER Rig Tank				AFE/CC NUMBER			
SIGNATURE 										Certification - I declare that the information contained in PART C is correct and complete.							
NAME OF AUTHORIZED PERSON (PRINT)																	
TELEPHONE																	
SIGNATURE																	

Waste Source Information

Select generating **company** and then select generating **facility** from drop-down menu. If shipping from a wellsite, select "wellsite" under **site type** and enter **license** and **LSD** (use **surface** location - downhole can be written in the comments section).

Intended Receiver Information

Select receiver **company** and **facility** from drop-down menus. Info will auto-fill into Section "C".

AER Waste Code

Select from drop-down menu (also see 1st column of CNRL Waste Management Chart).

Classification – Indicate "D" (DOW) or "N" (Non-DOW).

If DOW, insert appropriate **TDG shipping info** (from drop-down menu options – also see Shipping Information column of CNRL Waste Management Chart). Example shown is for crude oil emulsions at Kirby South Plant.

Signature – Sign section "A" and have Transporter sign section "B". Generator signee's contact numbers must be completed.

Type the **truck ticket number** and **source** description (e.g. tank or vessel name/number, spill clean-up, etc.).

- Issued by the Regulator with Unique B.C. Identifier number

Part A of the manifest

BC 12345-6

Movement Document / Manifest Reference No.
N° de référence du document de mouvement/manifeste

[illegible]

Instructions on reverse
Instructions au verso

Copy / Copie 3 (yellow / jaune)

Manifest not required.....

- ▶ A hazardous waste manifest not required if:
 - ▶ Waste is non hazardous/ NONDOW
 - ▶ A small quantity exemption exists
 - ▶ Transport is solely within property boundaries of Generator
- ▶ But some sort of **shipping documentation always required** and it must include the following:
 - ▶ Company Name:
 - ▶ Waste generating location
 - ▶ Classification information
 - ▶ AER waste code /waste description

Truck Drivers and Receivers are not responsible for determining waste characterization/classification

Examples of completed truck tickets accompanying Non-DOW shipments (AER manifest must accompany DOW shipments)
 All shipping documents accompanying Non-DOW shipments must indicate Non-DOW classification and AER waste code. If the transporter will be completing the truck ticket, it is the responsibility of CNRL as the waste generator to ensure that all required information including Non-DOW classification and waste code is communicated to the transporter for inclusion on the ticket.

ABC TRUCKING		Truck Ticket #: 123456	
555 Front Street High Level AB T2P 3N1			
Date:	12-Jan-22	Unit #	55
		Job #	1400NPP
		JSA #	11110
		Driver Name:	Jane Doe
Billing Information			
Customer:	Canadian Natural Resources Ltd.		
Customer Contact Name:	Sandy Right	Phone:	780-555-8977
Received From (Consignor)	Canadian Natural Resources North Place Plant	LSD AFE	09-02-081-23W4M 11122222
Delivered To (Consignee)	Receiver Company Yellow River	LSD	14-04-082-22W4M
Waste Shipment Information			
Shipment Description	Volume	DOW/Non-DOW	AER Waste CODE
Produced water from C tank	10m3	Non-DOW	WATER
Produced water from D tank	14m3	Non-DOW	WATER
	Total Volume	24m3	
Residue Last Contained?	<input checked="" type="checkbox"/>	Petroleum Crude Oil UN 1267 See attached truck ticket #123455	
Waste Generator Signature	Sandy Right	*AER Manifest Required for DOW	

Waste generating company name and contact person info must be included.

Waste generating location must be included.

Waste disposal destination must be included.

Must include Non-DOW classification and AER waste code somewhere on the ticket.

If residue last contained a dangerous good, the previous load shipping document for the dangerous good must also accompany load.

COMPANY LOGO		FLUID TICKET 00001	
Date:	Jan 23, 2022	Unit No:	222
Company:	X42 6-7-88-29 W4M	Job No:	123456
Billing Loc:		CLIENT STAMP	
24-Hour Emergency No:	X X X - X X X X		
TYPE OF WORK			
<input type="checkbox"/> Desand	<input type="checkbox"/> Pig Job	<input type="checkbox"/> Well Load	<input type="checkbox"/> Fluid Transfer
<input type="checkbox"/> Deep Pull	<input type="checkbox"/> Safety	<input type="checkbox"/> Flow Line	<input checked="" type="checkbox"/> Other
From Tank:	To Tank:	Quantity Hauled:	
		8 m ³	
Well Torque Start:	Well Torque Finish:		
Tank Gauge Opens:	Tank Gauge Closes:		
DESAND - Send	Weight In:	Weight Out:	TARE
DESAND - Fill	Weight In:	Weight Out:	TARE
FLUID HAULED			
<input type="checkbox"/> Sand	<input type="checkbox"/> Slur	<input type="checkbox"/> Water	<input type="checkbox"/> Oil
<input type="checkbox"/> Drilling Mud	<input type="checkbox"/> Other	<input type="checkbox"/> Steam	<input type="checkbox"/> Labour
<input type="checkbox"/> Pressure Truck	<input type="checkbox"/> Other	<input type="checkbox"/> Semi Vac	<input type="checkbox"/> Other
JANUARY 2022			
Drive to 6-7 wash out rig tank. Drive to SECURE h. base			
WSHWTR Non DOW			
DANGEROUS GOODS Q24-Hr. Emergency #: 555-555-5555			
<input type="checkbox"/> Residue Last Contained	<input type="checkbox"/> U.R.	<input type="checkbox"/> O.R.	<input type="checkbox"/> P.G.
<input type="checkbox"/> U.R.	<input type="checkbox"/> O.R.	<input type="checkbox"/> P.G.	<input type="checkbox"/> P.G.
Supervisor (print):	John Smith	Start Time:	5:30 am
Driver (print):	Ben Williams	Finish Time:	4:30 pm
Authorized by (print):	Ryan John	HOURS RATE PRICE	
Authorized by (sign):	RJ	Other:	
		Sub-Total	
		GST	
		TOTAL	

Key Messages

- ▶ Know your waste
 - ▶ When in doubt test it
 - ▶ Mixing of waste can change classification
- ▶ Know your local regulations
- ▶ Documentation is vital
 - ▶ Supports waste classification process
 - ▶ Demonstrates your due diligence
 - ▶ Key issue for AER inspections/ Worksafe BC



Questions?