



# Kansas

Department of Health  
and Environment

Bureau of Water – Geology and Well Technology Section  
Underground Hydrocarbon Storage

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Our vision is 'healthy Kansans living in safe and sustainable environments'.  
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**Kansas**  
Department of Health  
and Environment

# Brine Pond Inspection & Brine Spill Reporting Training

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## Objectives:

- History lesson – Why do we worry about brine ponds and spills?
- Develop consistency between facilities and on the KDHE end
- Update industry on KDHE's recent changes to approach on brine pond inspections and brine spill management
- Explain KDHE's expectations

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## History of brine ponds:

- The majority of the brine ponds in use today were installed in the 1950's and 60's
- Materials used to construct these ponds leaked over time
- Many ponds have extensive plumes of chloride contaminated groundwater associated with them



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- The ponds now have leak detection systems and synthetic liners
- By the end of 2017 all brine ponds in Kansas will be double lined.



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## History of brine spills:

- Prior to the 2000's, not many brine spills were reported to KDHE
- Large volume spills that were reported were only visually inspected, no samples were taken
- It was very rare for impacted soil to be removed
- Flushing the area with fresh water was the normal response
- Spill areas were flushed until visible salt crystals were not seen on the soil

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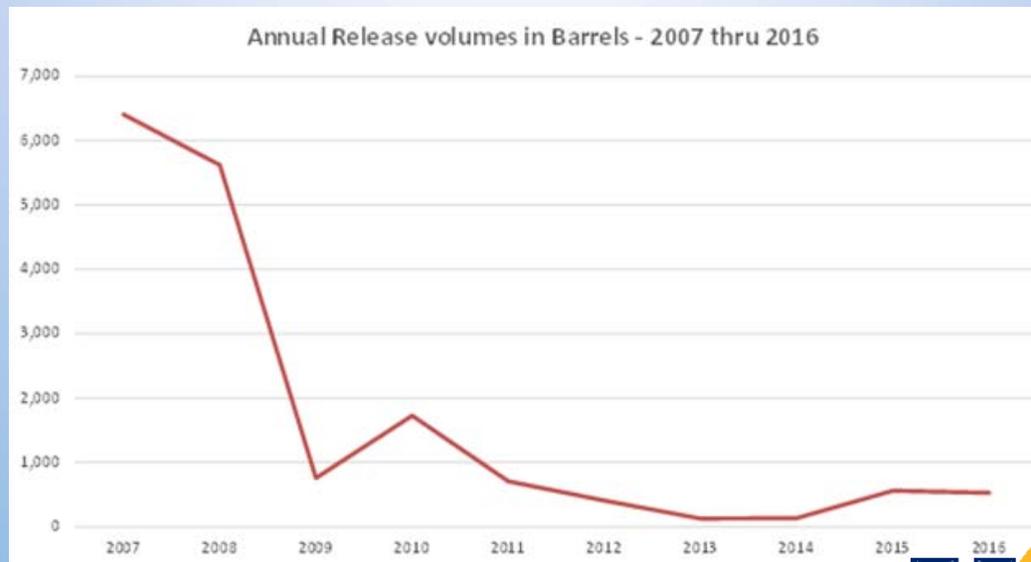
From 2007 through 2016, 16,964 bbls of brine were spilled at hydrocarbon storage facilities in Kansas



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As a result of extensive infrastructure upgrades, better management practices by operators and better response to these spills, the number of spills and average volume of spills has drastically decreased over the last several years



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# Brine Pond Inspections

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# Brine Pond Inspections

Previous KDHE approach:

- KDHE staff originally conducted inspections annually
- Due to staffing limitations, this was shifted to a biannual schedule
- Process:
  - Walk the perimeter of the ponds looking for structural deficiencies
  - Walk the liner, both at the top of berm and near the brine level, closely checking the liner for rips, holes, loose patches or seams, etc.
- Typically conducted in the spring, when the ponds are at their lowest level, allowing for more of the liner to be inspected

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# Berm Deficiencies Encountered During Inspections

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# Top of Liner Deficiencies Encountered During Inspections

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# Brine-Level Liner Deficiencies Encountered During Inspections

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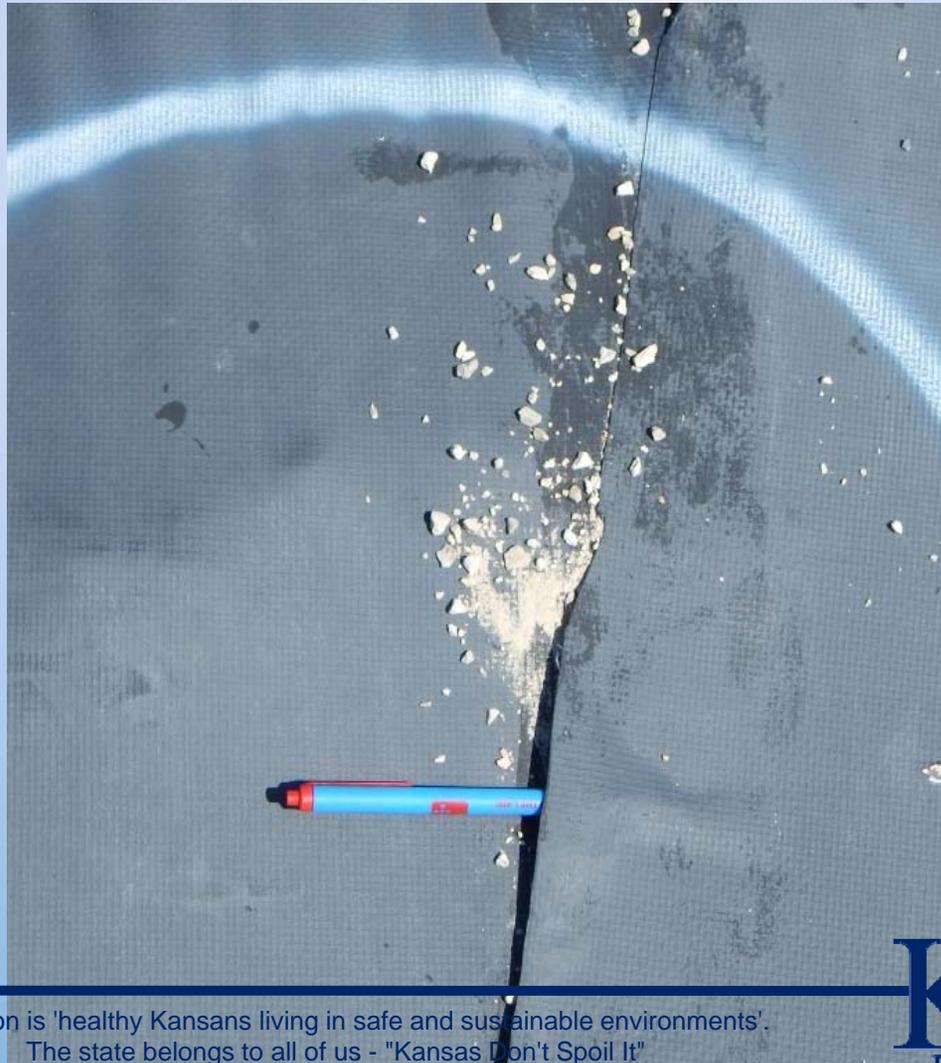
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- KDHE staff will NOT be conducting brine pond inspections anymore
- KDHE WILL be witnessing the inspection of brine ponds by facility staff once a year
- Operators will be required to notify KDHE at least TWO WEEKS prior to conducting brine pond inspections to allow for KDHE staff to be present to witness the inspection.



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Kansas Department of Health and Environment  
Underground Hydrocarbon Storage  
Semiannual - Annual Brine Pond Inspection Report

Company: \_\_\_\_\_ Facility: \_\_\_\_\_  
Pond Permit: \_\_\_\_\_ Pond Number: \_\_\_\_\_

Submit report to KDHE within 30 days after the end of the reporting period

Specify type of inspection: Semiannual  (Complete Section A Only) Annual  (Complete Sections A and B)

Section A: Semiannual Inspection

Anchor Trench (Visually inspect anchor trench for erosion and loose liner)
Gas Detectors and Igniters (Test and re-calibrate gas detectors and test igniters for proper operation. Check remote data and alarm functions. Provide dates of these test/checks)
Pond back, slope, and drainage (Visually inspect for erosion and surface tension cracking on top and back slope of berm)
Primary Liner (Visually inspect liner for mechanical damage or UV degradation)
Inspected by: _____ Date: _____

Section B: Annual Inspection is to be performed when pond is at its lowest level

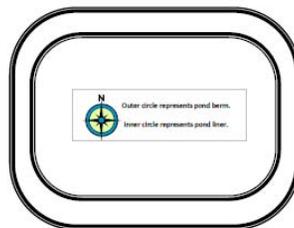
Exposed Influent Piping (Visually inspect pipe, pipe supports, and concrete pads for damage or cracks)
Liner Penetrations (Visually inspect liner including weirs and submerged structures)
Liner subgrade (Visually inspect for slope failure or erosion under the liner)
Vegetation (Visually inspect vegetation on outer slopes. Remove cattails and woody vegetation)
Inspected by: _____ Date: _____



Signature of facility manager \_\_\_\_\_

Date of review \_\_\_\_\_

Indicate areas from above on diagram below

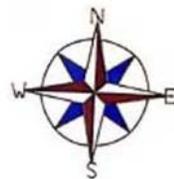


R/Revised\_BP\_S-A\_Inspection\_10-23-2014

- Brine pond inspections are required on a semiannual basis
- Preferably in the spring (when the brine levels are at their lowest) and in the fall
- Results of the inspections should be well documented on the KDHE Semiannual Brine Pond Inspection Report form

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Outer circle represents brine pond dike.

Inner circle represents brine pond liner.

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# Brine Spills

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# What happens when you have a brine spill?

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- Brine spills that meet the following criteria must be reported to KDHE-BOW-UHS within 2 hours of discovery:
  - Uncontrolled spills
  - Spills that enter a waterway
  - Spills that have the potential to threaten to wildlife
  - Brine spill amount greater than 1 barrel that impacts soil
- Brine spills that do not meet the above criteria and are of less than one barrel, can be reported during normal business hours

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# Brine Spill Reporting Process

- Report spill to KDHE (UHS program and BER Spills Hotline)
- Written report due to UHS program within one week
- Document spill clean up as it occurs, for the closure report, i.e. pictures, sample data, etc.
- Submit request for closure when process is completed

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# Brine spills should be reported to the UHS Program and BER Spills Hotline

UHS Program Spills Contact:  
Doug Doubek – (785) 224-6717

BER Spills Hotline:  
(785) 291-3333

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# BER Spills Program

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# KANSAS SPILL REPORTING



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## K. A. R. 28-48. – SPILL REPORTING

**28-48-2. ACTION REQUIRED.** ALL SEWAGE, SUBSTANCES, MATERIALS, OR WASTES, AS SET FORTH IN 65-171D, REGARDLESS OF PHASE OR PHYSICAL STATE, WHICH ARE, OR THREATEN TO CONTAMINATE OR ALTER ANY OF THE PROPERTIES OF THE WATERS OF THE STATE OR POLLUTE THE SOIL IN A DETRIMENTAL, HARMFUL, OR INJURIOUS MANNER OR CREATE A NUISANCE, SHALL BE REPORTED IN THE FOLLOWING MANNER:

(A) THE OWNER OR PERSON RESPONSIBLE FOR THE DISCHARGE OR ESCAPE OF MATERIALS DETRIMENTAL TO THE QUALITY OF WATERS OF THE STATE OR POLLUTION OF THE SOIL UNDER CONDITIONS OTHER THAN PROVIDED BY A VALID PERMIT ISSUED BY THE SECRETARY OF HEALTH AND ENVIRONMENT, SHALL REPORT THE DISCHARGE OR ESCAPE TO THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT.

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# K. A. R. 28-48. – SPILL REPORTING

## 28-48-2. ACTION REQUIRED.

(B) EMERGENCY OR ACCIDENTAL DISCHARGE OF MATERIALS WHICH ARE DETRIMENTAL TO THE QUALITY OF WATERS OF THE STATE OR TEND TO CAUSE POLLUTION OF THE SOIL SHALL BE IMMEDIATELY REPORTED TO THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT BY THE OWNER, OWNER'S REPRESENTATIVES, OR PERSON RESPONSIBLE. IN THE EVENT THE POLLUTION CAUSING MATERIAL IS IN TRANSIT OR IN STORAGE WITHIN THE STATE, THE OWNER, CARRIER, OR PERSON RESPONSIBLE FOR STORAGE SHALL BE RESPONSIBLE FOR IMMEDIATE NOTIFICATION TO THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT THAT THE POLLUTANT WILL GAIN ADMITTANCE TO THE WATERS OF THE STATE OR THE SOIL. (AUTHORIZED BY AND IMPLEMENTING K.S.A. 1984 SUPP. 65-171D; EFFECTIVE MAY 1, 1986.)

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# K.S.A. 65-171V. – CLEANUP OPERATION

WHENEVER A WATER OR SOIL POLLUTANT IS DISCHARGED INTENTIONALLY, ACCIDENTALLY OR INADVERTENTLY AND THE SECRETARY OF HEALTH AND ENVIRONMENT OR HIS OR HER AUTHORIZED REPRESENTATIVE DETERMINES THAT THE DISCHARGED MATERIAL MUST BE COLLECTED, RETAINED OR RENDERED INNOCUOUS, AND IF A DISCHARGER REFUSES TO UNDERTAKE CLEANUP OPERATIONS OR IF THE RESPONSIBLE DISCHARGER IS UNKNOWN AT THE TIME, THE SECRETARY OR HIS OR HER AUTHORIZED REPRESENTATIVE MAY ENTER INTO AN AGREEMENT WITH A PERSON TO CONDUCT THE NECESSARY CLEANUP OPERATIONS WITH PAYMENT FOR SUCH CLEANUP WORK TO BE PROVIDED FROM THE POLLUTANT DISCHARGE CLEANUP FUND. ANY PERSON RESPONSIBLE FOR OR CAUSING THE DISCHARGE OF MATERIALS WHICH ARE DETERMINED NECESSARY TO CLEANUP UNDER THE PROVISIONS OF THIS ACT SHALL BE RESPONSIBLE FOR REPAYMENT OF THE COSTS OF CLEANUP WORK UPON REASONABLY DETAILED NOTIFICATION BY THE SECRETARY OR HIS OR HER AUTHORIZED REPRESENTATIVE. IF THE RESPONSIBLE PERSON FAILS TO PROMPTLY SUBMIT PAYMENT FOR COSTS OF THE CLEANUP OPERATIONS WHEN SO NOTIFIED, SUCH PAYMENT SHALL BE RECOVERABLE IN AN ACTION BROUGHT BY THE ATTORNEY GENERAL ON BEHALF OF THE PEOPLE OF THE STATE OF KANSAS IN THE DISTRICT COURT OF THE COUNTY IN WHICH SUCH COSTS WERE INCURRED. ANY MONEYS RECOVERED UNDER THIS SECTION SHALL BE REMITTED TO THE STATE TREASURER. UPON RECEIPT THEREOF, THE STATE TREASURER SHALL DEPOSIT THE ENTIRE AMOUNT THEREOF IN THE STATE TREASURY TO THE CREDIT OF THE POLLUTANT DISCHARGE CLEANUP FUND.

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# OVERVIEW OF KDHE SPILL PROGRAM

- BUREAU OF ENVIRONMENTAL REMEDIATION
  - 24/7 SPILL REPORTING PHONE LINE (785) 291-3333
  - TRACK AND COORDINATE KDHE RESPONSE TO SPILLS STATEWIDE AND ASSIST OTHER PROGRAMS IN EMERGENCIES
  - EMERGENCY CONTACT AFTER NORMAL BUSINESS HOURS FOR DIVISION OF ENVIRONMENT PROGRAMS
- KDHE DISTRICT OFFICE STAFF RESPOND AS NECESSARY

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# OVERVIEW OF KDHE SPILL PROGRAM

- KDHE RESPONDERS:
  - PROVIDE TECHNICAL ADVICE FOR ENVIRONMENTAL PROTECTION TO THE LOCAL INCIDENT COMMAND DURING EMERGENCY RESPONSE ACTIONS
  - PROVIDE OVERSIGHT OF RESPONSIBLE PARTIES DURING CLEAN-UP
- KDHE SPILLS PROGRAM:
  - COORDINATES EPA ASSISTANCE IF NECESSARY
  - COORDINATE WITH STATE AND LOCAL PARTNERS FOR RESOURCES AND JOINT RESPONSE TO SPILLS
  - REFERRAL TO THE APPROPRIATE REMEDIAL PROGRAM

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# REPORTING SPILLS

- CONTACT STATE SPILL LINE *AFTER LOCAL RESPONSE IS INITIATED*: **(785) 291-3333**
  - ACCURATE LOCATION
  - ACCURATE IDENTIFICATION AND QUANTITY OF MATERIAL
  - RELIABLE CONTACTS AND MEANS OF COMMUNICATION
- CONTACT NRC WHEN INCIDENT EXCEEDS CERCLA RQ

## ENHANCES MOBILIZATION OF FEDERAL RESOURCES

- **SPILLERS RESPONSIBILITY**

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# WHAT TO REPORT TO KDHE

- OIL / PETROLEUM
- HAZARDOUS MATERIALS / CHEMICALS
- OTHER CONCENTRATED SUBSTANCES
  - BRINE
  - GRAIN, MILK OR OTHER BULK PRODUCTS \*
  - BLOOD AND OTHER ANIMAL BY-PRODUCTS \*
  - FERTILIZER \*
- SEWAGE \*

\* DEPENDS ON SITUATION

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# KDHE REPORTING INSTRUCTIONS

## KANSAS SPILL NOTIFICATION



Kansas Department of Health and Environment  
In partnership with:  
Kansas Division of Emergency Management  
Kansas Corporation Commission

December 1, 2014

<http://www.kdheks.gov/spill/>

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# KDHE SPILL RESPONSE

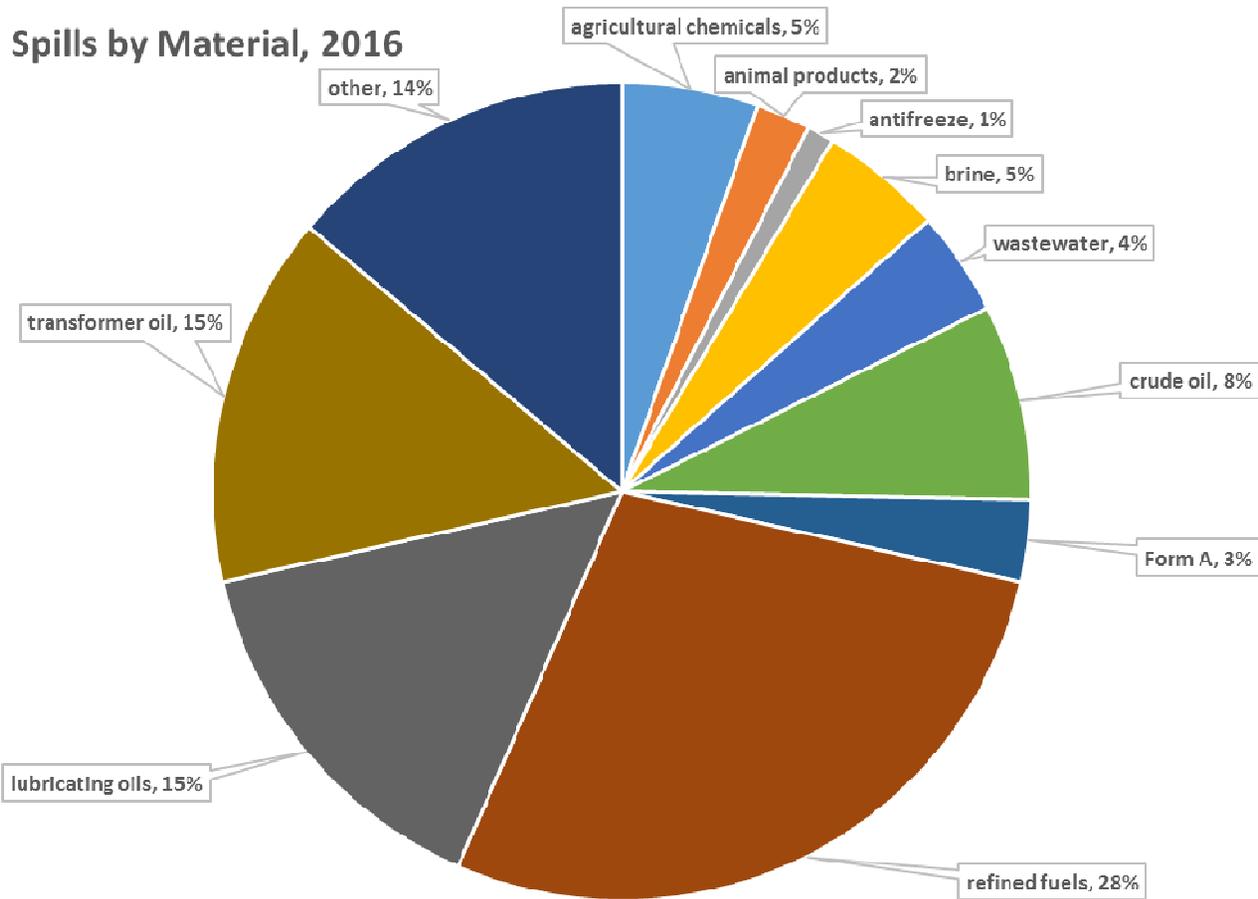
- 557 REPORTED RELEASES FOR 2016
  - 156- REFINED FUELS (GASOLINE, DIESEL)
  - 83- LUBRICATING OILS
  - 82- TRANSFORMER OIL
  
- 150- FIXED FACILITIES
- 111- MOTOR VEHICLES
- 55- TRANSFORMERS

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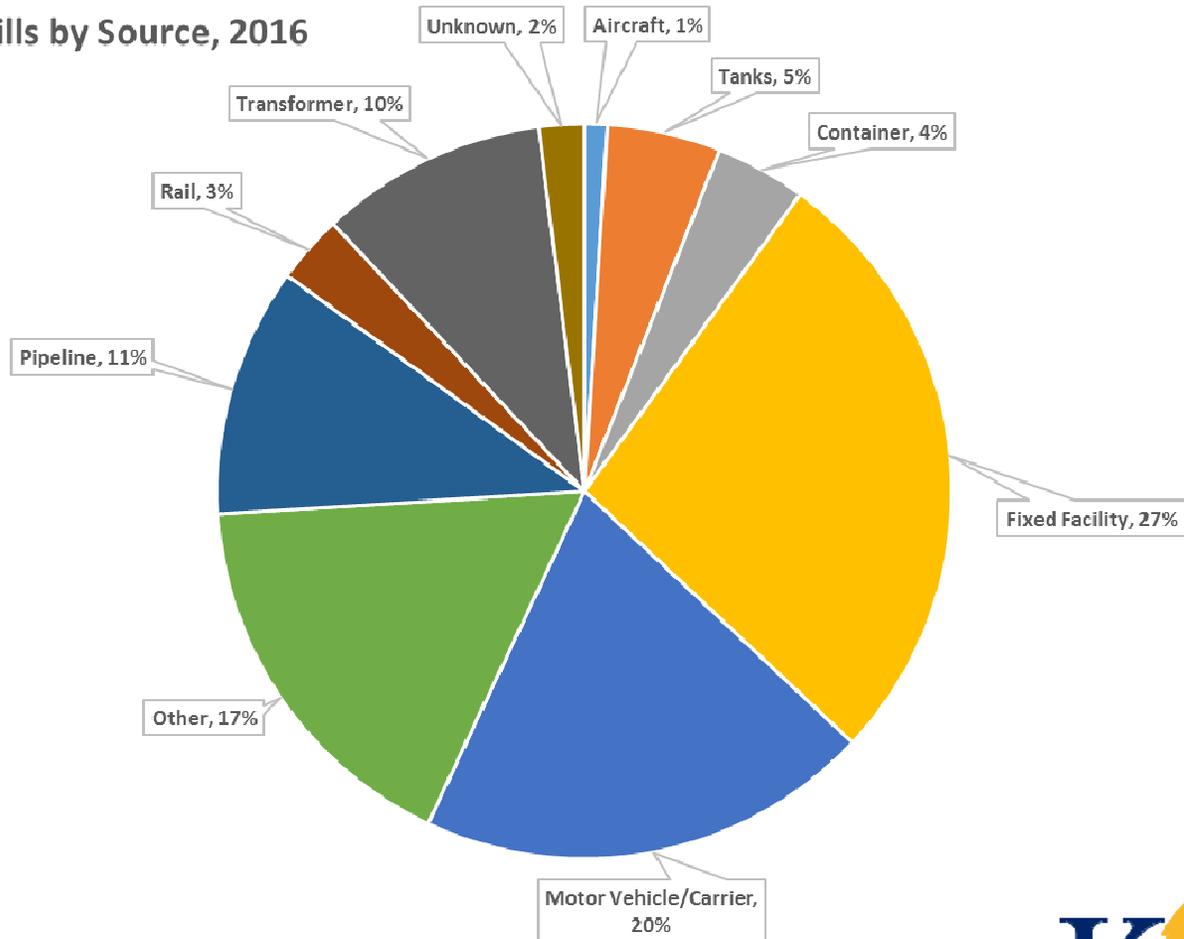


## Spills by Material, 2016



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## Spills by Source, 2016



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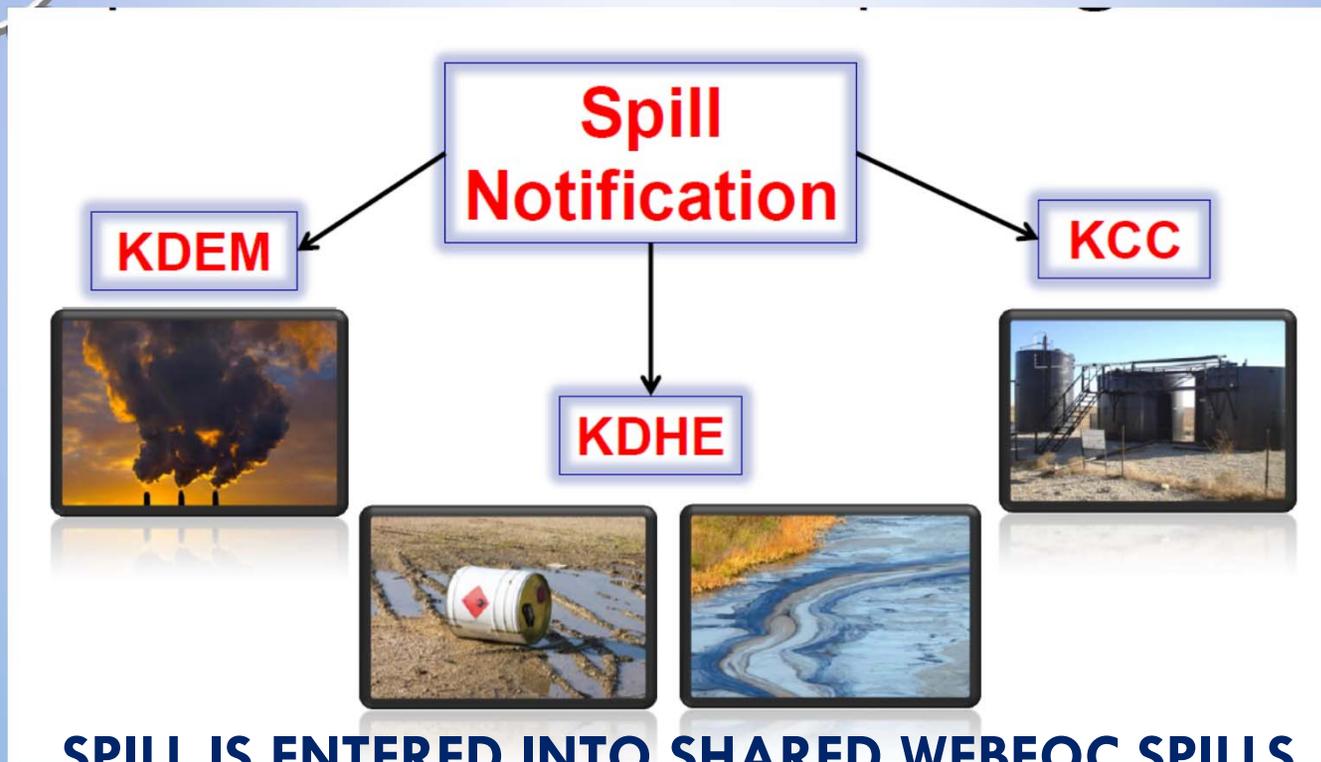
# ALL HAZARD NOTIFICATION (785) 291-3333

- WHY CHANGE?
- SPILLER IS REQUIRED TO MAKE IMMEDIATE NOTIFICATION OF RELEASE OR UNPERMITTED RELEASE; **OFTEN TO MULTIPLE AGENCIES**
- DIFFERENT NOTIFICATION REQUIREMENTS FOR EACH AGENCY
  - SOIL OR WATER: KDHE
  - CERCLA RQ: KDEM, LEPC, NRC
  - OIL PRODUCTION: KCC
- SOLUTION: ONE PHONE NUMBER FOR ALL SPILL & HAZARD REPORTING\*
- AUTOMATED CALL MENU ROUTING TO DIRECT TO THE APPROPRIATE AGENCY
  
- \*DOES NOT NOTIFY LEPC OR NRC

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**SPILL IS ENTERED INTO SHARED WEBEOC SPILLS DATABASE WHERE KDHE/KDEM/KCC RECEIVE NOTIFICATION**

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## WebEOC Account Request Form

WebEOC Administrator

Phone: (785) 274-1409

E-mail: marlo.g.tangney.nfg@mail.mil

### Emergency Manager/ Supervisor Information:

Name:  County:

Organization:  Email Address:

City:  Signature:

Please include to the right the name(s), e-mail address(s), and corresponding position(s) for which the user should have access.

For example:  
Bob Miller, bob.miller@test.com; Position(s): Smallville County  
John Smith, john.smith@test.com; Position(s): Holly Frontier Refinery

To expedite processing, please provide all information in the proper format.

#### Positions Available:

##### 1. County Position

##### 2. Industry Position

Your industry you work for (for the Spill Database/Form A)

##### 3. ESF Position within the State Emergency Operations Center (SEOC)

Once you have completed the form, print, sign, and email the form to the WebEOC Administrator.

Kansas Division of Emergency Management reserves the right to deny, revoke, or disable access to anyone under any circumstance at any time.

By selecting this you agree to the following terms and conditions:

I understand this form serves as my authorization and approval for the above individuals to access WebEOC as part of my jurisdiction in the position(s) listed.

I have read the position descriptions and understand the permissions associated with the positions for which I am requesting access.

\*\*\*\*\*Please allow up to five business days for processing.

Print Form

- <http://www.kansastag.gov/KDEM.WebEOC>
- (Google: KDEM WebEOC)
- KDEM WebEOC Account Request
- WebEOC Users Guide
- KDEM WebEOC Policies and Procedures



vironments'

**WWW.KANSASWEBEOC.COM/EOC7/DEFAULT.ASPX**

## WebEOC 8.1 Login

For more information, account setup, or password resets please call

Kansas Division of Emergency Management

Monday through Friday, 8:00 AM - 4:00 PM

at (785) 646-1409.

After hours, please call (785) 291-3333, and press option 2.

More information can be found at <http://www.kansastag.gov/kdem.webeoc>  
*This information is not for public disclosure and is intended for authorized WebEOC users only. WebEOC works best on Chrome or Firefox.*

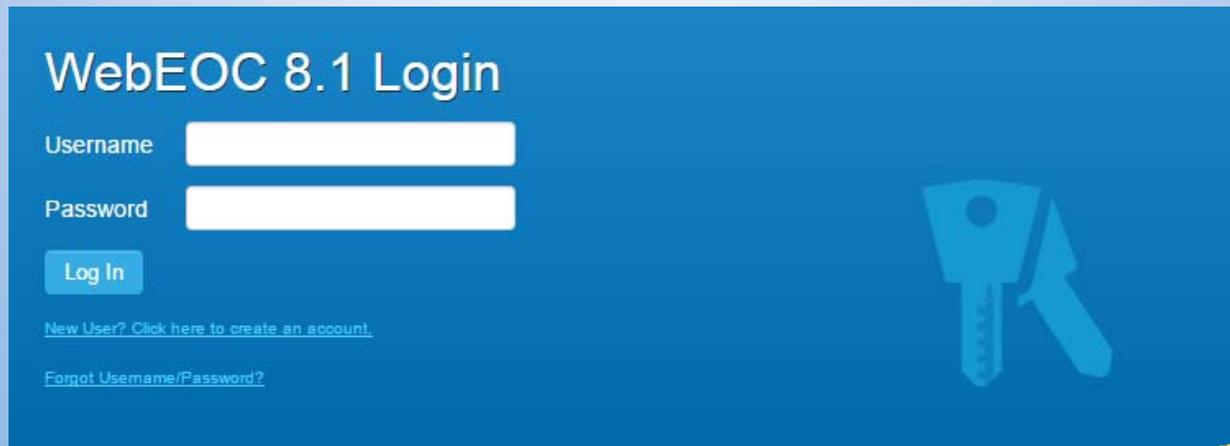
Accept

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# WEBEOC USERS

- Each user is assigned a unique username and password to log into WebEOC  
*FirstName "dot" LastName (joe.dom)*

A screenshot of the WebEOC 8.1 login interface. The form is set against a dark blue background. It features the title "WebEOC 8.1 Login" at the top. Below the title are two white input fields: "Username" and "Password". A blue "Log In" button is positioned below the password field. To the right of the input fields is a faint blue icon of a key. At the bottom of the form, there are two links: "New User? Click here to create an account." and "Forgot Username/Password?".

WebEOC 8.1 Login

Username

Password

[Log In](#)

[New User? Click here to create an account.](#)

[Forgot Username/Password?](#)

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# WEBEOC POSITION & INCIDENT

WebEOC 8.1 Login

Position: Industry -

Incident: KS Daily 2016

Cancel Continue

WebEOC 8.1 Login

Position: Industry - CHS Inc. - McPh

Incident: KS Daily 2016

EXERCISE - 06 14 16 Cooper

EXERCISE - 06 22 16 Wolf Creek

KS Daily 2016

Severe Storms 05 24-26 2016

Severe Storms 07 07 2016

Powered by **intermedix**

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Incident normally is  
"KS Daily 2017"

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# WEBEOC USER INFORMATION

**WebEOC 8.1 Login**

**Additional Login Information**

Name \*

Location

Phone Number

Email \*

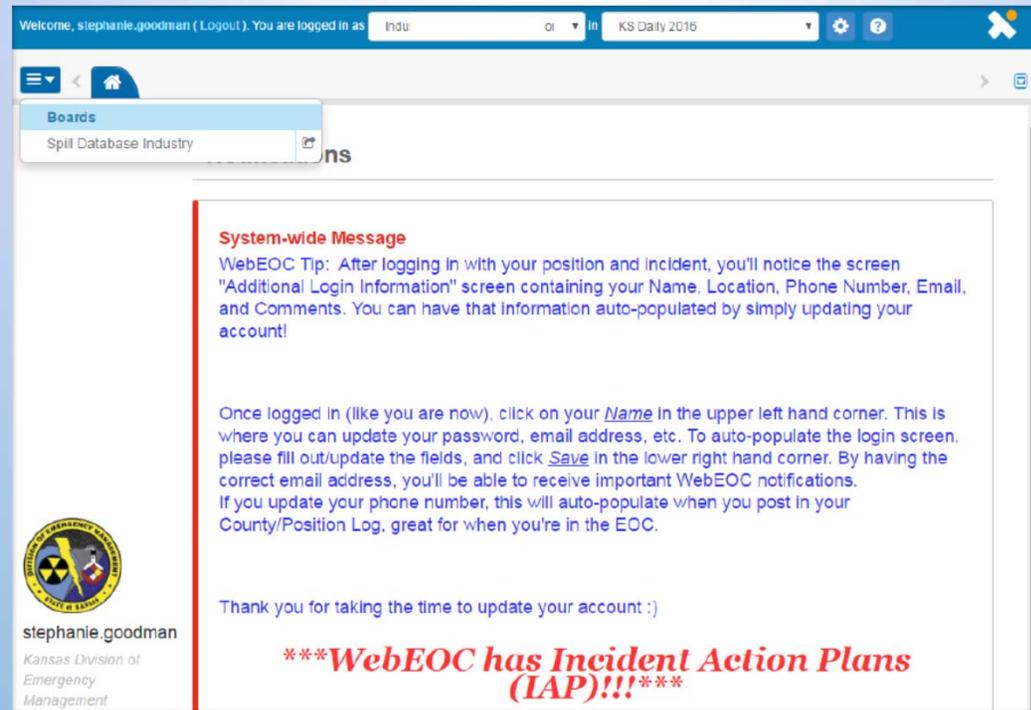
Comments

User may update their User Account Information here

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# WEBEOC CONTROL PANEL



Welcome, stephanie.goodman (Logout). You are logged in as Indu or in KS Daily 2016

Boards  
Spill Database Industry

**System-wide Message**

WebEOC Tip: After logging in with your position and incident, you'll notice the screen "Additional Login Information" screen containing your Name, Location, Phone Number, Email, and Comments. You can have that information auto-populated by simply updating your account!

Once logged in (like you are now), click on your Name in the upper left hand corner. This is where you can update your password, email address, etc. To auto-populate the login screen, please fill out/update the fields, and click Save in the lower right hand corner. By having the correct email address, you'll be able to receive important WebEOC notifications. If you update your phone number, this will auto-populate when you post in your County/Position Log, great for when you're in the EOC.

Thank you for taking the time to update your account :)

**\*\*\*WebEOC has Incident Action Plans (IAP)!!!\*\*\***

stephanie.goodman  
Kansas Division of  
Emergency  
Management

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# WEBEOC DATABASE

View all records reported by your industry

The screenshot shows the WEBEOC Database interface. At the top, there is a navigation bar with the text "Welcome, stephanie.goodman (Logout) You are logged in as" followed by a dropdown menu set to "Test Industry" and another dropdown set to "KS Daily 2016". There are also settings and help icons. Below this is a breadcrumb trail: "Spill Database Industry". The main heading is "Form A" with the "intermedix" logo to the right. There are three tabs: "All Records" (selected), "Submitted Records", and "Closed Records". A search bar with "Search Options" is located on the right. Below the search bar is a table with the following data:

Incident Number	County	Incident Date	Notification Date	Spiller Organization	Material	Quantity	Units	Lead Agency	Edit	Details	Print	Submitted?	Closed?
40074	Allen	06/03/2016 09:36:01	06/03/2016 09:36:01	Test Industry	Sulfur Dioxide (SO2)	1	Pounds	KDEM	Edit	View	Print	Yes	

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# WEBEOC BASICS & SPILLS DATABASE

- KDEM hosted training for State, County, and Industry
- WebEOC, Spill Database & All Hazards Notification #
  - April 11, 2017: 9a-Noon  
Wamego EMS Training Center  
406 Miller Drive, Wamego
  - April 19, 2017: 8a-Noon or 1p-5p  
Sedgwick County Emergency Operations Center, Wichita  
714 N. Main Street, Wichita
  - June 6, 2017: 9a-Noon or 1p-4p  
Lyon County Sheriff's Department  
425 Mechanic Street, Emporia



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# INTERNET RESOURCES

- Kansas Environmental Interest Finder (KEIF)
  - Spill Maps upgraded and linked to spill reports
  - Spill Maps update nightly from WebEOC

**<https://maps.kdhe.state.ks.us/keif/>**

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**KDHE Environmental Interest Finder**  
 Enter address in search box or Zoom into map to list KDHE Points of Interest in your map area.

**LEGEND**

- ▼ ISL: Identified Sites List
- ▲ TRI: Toxic Release Inventory
- ▲ Spills
- ▲ LUST: Leaking Underground Storage Tanks
- ▲ Air Quality
- ▲ UIC: Underground Injection Wells
- ▲ WW: Waste Water
- ▲ Dry Cleaners
- ▲ Tanks: Above and Underground Storage Tanks
- ▲ RTK: Right-to-Know
- ▲ RCRA: Resource Conservation and Recovery Act
- ▲ Solid Waste/Landfills/Dumps

*All symbols bolded points in the legend may not be visible in the map extent.*

**Excluded programs:**

- Confined Animal Feeding Facility
- PWS: Public Water Sources

**Map Contents and Descriptions**

Check to turn on/off Environmental Interest Point

- Contaminated
  - ISL: Identified Sites List
  - TRI: Toxic Release Inventory
  - Spills
  - LUST: Leaking Underground S
- Regulated
  - Air Quality

**KOCH HYDROCARBON CO**  
 Location: 2819S04W,  
 KDHE Program: Spill Incident Report  
 KDHE's Facility ID: KDHE-12557-SPILL  
 Status: Closed

[More Information on Spills Reporting](#)  
[More Details about this Spill](#)

**Environmental Interest Finder Information. Use of names/addresses for commercial purposes is prohibited under KS law. KDHE makes no assurance of the accuracy of information presented on the map**

KDHE Program	Name	Program ID	Location	City	Status
Spill Incident Report	ONEOK HYDROCARBON LP (BRINE)	KDHE-31616-SPILL	3019S04W		Conditional Closure
Spill Incident Report	ONEOK HYDROCARBON LP	KDHE-30600-SPILL	3019S04W		Closed
Spill Incident Report	ONEOK HYDROCARBON LP MCPHERSON	40933-SPILL	661 US 56 HWY	CONWAY	Open
Spill Incident Report	ONEOK HYDROCARBON LP (BRINE)	KDHE-32021-SPILL	3019S04W		Conditional Closure

<https://maps.kdhe.state.ks.us/keif/>

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## KDHE INCIDENT NOTIFICATION REPORT

[Download Pdf](#)

Spill Number: KDHE-12557		Reported Date/Time: 1/23/1998 3:20:00 PM		Spill or Complaint: Spill		
<b>DISCHARGER</b>			Organization Type:			
Discharger Name: Koch Hydrocarbon Company		Phone: 316-662-6691				
Contact Name: Jon Saven		Phone:				
Address: 1910 Broadacres Road			Operator Id #:			
City: Hutchinson		State: KS		Zip: 67505		
<b>INCIDENT LOCATION</b>			911 Street Address: East Edge Of Conway			
County: McPherson		KDHE District: NC		City: Conway		
		Legal Description: 28 ,19S , 04W		Zip:		
Facility or Lease Name:		Approximate Location or Other Directions:				
Facility or Permit Number:		KCC District: Wichita				
Latitude:		Longitude:				
Location Comment:				Official Latitude: 38.3632	Official Longitude: -97.77599	
<b>DATE</b>			Spill Date/Time: 1/23/1998 12:00:00 AM		Discovery Date/Time: 1/23/1998 12:00:00 AM	
<b>MATERIAL</b>						
<u>Material Class</u>	CAS #	UN DOT #	Quantity Spilled	Quantity Recovered	Units	Quantity In Water
<u>Material Name</u> brine/salt water saturated brine			250		barrels	
<b>SOURCE</b>			Source of Spill: pipeline			

<https://maps.kdhe.state.ks.us/keif/>

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[kdhe.SpillHotline@ks.gov](mailto:kdhe.SpillHotline@ks.gov)

**(785) 291-3333**

Joseph Dom, P.G.  
Response and Remediation Unit Chief  
Bureau of Environmental Remediation  
(785) 296-4367  
[joe.dom@ks.gov](mailto:joe.dom@ks.gov)

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# UHS Brine Spills Program

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- The UHS Brine Spills program has a separate spill tracking database that spills get entered into when they are reported by operators or forwarded from BER
- UHS staff will conduct an inspection of the spill and take photographs and possibly split samples
- The operator should keep UHS staff updated on spill clean up as it progresses

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- The operator should keep detailed notes on spill progress. This should include, but is not limited to:
  - Photographs – before, during and after clean-up
  - Sample data – analytical data, sample locations, sample dates
  - Volume data – volume of brine recovered, volume of soil excavated, volume of fresh water used for flushing, etc.
  - Clean-up measures used – i.e. brine recovery, soil removal, flushing, etc.

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Once clean-up is complete, the operator should submit a closure report

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Repts. Inc (785) 296-7265 Fax (785) 296-5509  
Bureau of Water - Geology Section  
1000 SW Jackson St - Suite 420  
Topeka, KS 66612-1367

**PROCEDURE FOR SUBMITTING CLOSURE REQUEST  
FOR BRINE RELEASE AT AN UNDERGROUND  
HYDROCARBON STORAGE FACILITY**

**Procedure #: UICLPG-31**  
(12/13)

Narrative:

Brine releases have the potential to contaminate soils, surface waters, and groundwater if not effectively remediated. Thirteen key elements have been identified to adequately demonstrate that the risk of environmental contamination has been removed following such an event. Based on the review of these key elements an official release closure status will be assessed with the responsible party being notified of this closure status. There are three types of closures which may be assigned to a release, these are:

- Closed** – When the situation, size of release and location allows complete and definitive removal.
- Conditional Closure** – When you are relatively sure the new release is cleaned up but chlorides in the soil are already elevated from historical spillage.
- Referred** – When the impacted media from the new release cannot be completely removed or remediated in a reasonable time, when groundwater impacts or threats remain, if physical structures restrict the removal of contaminated material, or when significant previously undiscovered contamination is encountered and cannot be differentiated between the new and old during removal.

Key Elements:

1. **Release Details:** a brief statement including location of the release including: the nearest identifiable landmark, well, etc, locals include (quarter, section, township, range and county) and GPS location for the release site, estimated volume of the release, and date and time release occurred.
2. **Reporting:** Who made the initial release notification? Who was release reported to? Times and dates of these notifications.
3. **Initial Response and Containment:** How was the release secured (isolation of brine lines, closing valve, turning off a pump, etc)? How was release contained (digging bell hole, constricting temporary containment dams, etc)? Did release leave company owned property or impact a water way?
4. **Extent of Release:** Provide a detailed site description of the release area. How far did release flow (size of impacted area in feet), etc? **PROVIDE A SITE MAP (Example Provided) including original release point, outline of extent of release, initial excavations, locations of soil samples (covered in item #9), identify surrounding wells, landmarks, etc and scale and legend for map.**
5. **Recovery of Released Fluids:** If released fluid was recovered, how was it recovered? Volume of initially recovered fluid up to the time the release is being identified during initial excavated? This

# Closure requests for brine spills should follow the KDHE-BOW Procedure Document

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## The closure report should include the following:

- Details of the release
- Reporting information
- Initial response and containment information
- Extent of the release
- Recovery of brine
- Any repairs made
- Information on soil removal
- Method of removal of brine impacted materials from the spill site
- Soil sample data
- Flushing information if applicable
- Site restoration information
- Final Summary

---

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## Details of the spill should include:

- Location information - facility name and address, GPS coordinates of spill location, landmark or well near the spill location
- Map of the spill location
- Photographs of the spill area
- Estimated volume of brine released
- Date and time the release occurred
- Cause of the spill

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## Reporting information for the spill should include:

- Name of person who made the initial spill notification
- Names of UHS Spill Program staff and KDHE Spill Hotline staff notified
- Times and dates of these notifications
- Spill number given by KDHE Spill Hotline

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## Initial response and containment information should include:

- Measures used to stop the release
- Measures used to contain the released brine
- Information on any water ways or adjacent properties impacted by the spill

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## Extent of release information should include:

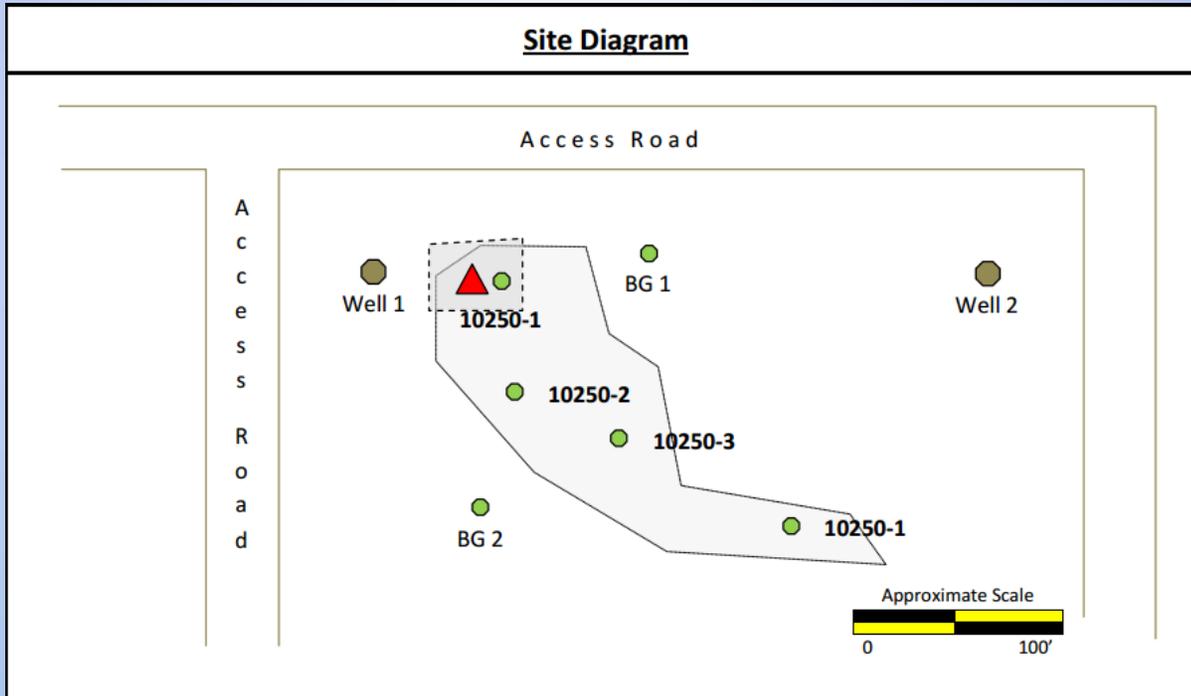
- Detailed site description of the release area
- Approximate dimensions of the impacted area
- Map showing the following:
  - Original release point
  - Outline of the extent of the release
  - Identification of surrounding wells
  - Landmarks
  - Legend and Scale

---

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### Site Diagram



**LEGEND:**

- Well
- Release Point
- Sample Point
- Extent of Release
- Extent of Initial Excavation
- Access Road



KDHE Release # 10250  
 Site Location: 50' east of well 1  
 Company Name: M&J Consolidated  
 Address: 4100 Clearview Dr  
Nowheresville, KS 60606  
 Legal: (Quarter, NE,SW,NW  
 Section, Town, Range, S20 T11S R16E  
 County) Shawnee  
 GPS Location: N 39°4'58"  
 (any format acceptable) W 95°3'57"

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## Recovery of released brine information should include:

- Method used to recover any free brine
- Volume of brine recovered

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## Information on any repairs made could include:

- Pipeline repairs – i.e. patches, pipe replacement or lining, etc.
- Valve repair or replacement
- Any other equipment requiring repair or replacement

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## Excavation information should include:

- Dimensions of excavated area
- Volume/amount of soil removed
- Method of excavation – i.e. hand excavation, mechanical excavation, hydrovac, etc.
- Map of excavated area
- Photographs of the excavated area
- Justification for excavation limits

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## Method of removal of brine impacted material from the spill site should include:

- Material disposed of at a landfill or beneficially reused by emplacement in salt cavern
- Name and location of the material receiving facility
- Special Waste Authorization identification number from KDHE's Bureau of Waste Management, if material was disposed of at a landfill

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## Soil sample information should include:

- Initial field screening results if applicable
- Description of sampling strategy
- Method used to collect samples
- Sample location, including depth
- Name of laboratory used to analyze samples (must be a KDHE certified lab)
- Laboratory analytical method used to analyze samples
- Table of laboratory analytical results, sample identification, and sample date
- Map showing sample locations

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### SOIL SAMPLES:

Sample ID	Date Collected	Depth (ft / below ground level)	Chloride Level (mg/kg)	Sample ID	Date Collected	Depth (ft / below ground level)	Chloride Level (mg/kg)
BG-1	10/28/02	0-1	450	10250-2	11/4/02	2-3	3,500
BG-2	10/28/02	1-2	435	<b>10250-2</b>	<b>11/9/02</b>	<b>3-4</b>	<b>870</b>
10250-1	10/28/02	4-5	29,600	10250-3	10/28/02	1-2	4,500
10250-1	10/28/02	5-6	18,300	10250-3	11/4/02	2-3	1,300
10250-1	11/4/02	6-7	2,900	<b>10250-3</b>	<b>11/9/02</b>	<b>3-4</b>	<b>650</b>
<b>10250-1</b>	<b>11/9/02</b>	<b>7-8</b>	<b>980</b>	10250-4	10/28/02	0-1	1600
10250-2	10/28/02	1-2	18,700	<b>10250-4</b>	<b>11/4/02</b>	<b>1-2</b>	<b>480</b>

### NOTES:

1. Brine release occurred on: **October 25, 2002**
2. The Kansas Department of Health and Environment (KDHE) action level for chlorides is 1,000 mg/kg for brine impacted soils.
3. Concentrations above KDHE action level for chlorides denoted in **RED**.
4. Concentrations below KDHE action level for chlorides denoted in **BLACK** (Report closure samples).
5. Soil samples analyzed for chlorides by: **A1 Environmental Laboratory**
6. BG – Background soil sample collected outside the extent of the release.

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## Flushing information should include:

- Description of flushing setup
- Volume of fresh water used for flushing
- Chloride concentrations of recovered flush water over the flushing period
- Discussion of chloride concentrations in soil before and after flushing
- Photographs of the flushing process

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## Site restoration information should include:

- Backfill information – material used, origin of material used, analytical results of any samples taken
- Description of activities used to restore vegetation if applicable
- Photographs of restored spill area

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## The final summary should include:

- A recap of the spill response and remediation activities
- A request for closure or conditional closure, dependent on the final soil sample results
- Justification for closure or conditional closure

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# What happens next?

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KDHE UHS staff reviews the closure report and determines if the spill will be closed, conditionally closed, or referred.

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All remaining soil impacts must be below 1000 mg/kg or below the site specific cleanup level, if applicable, for a spill to be closed.

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## Considerations for conditional closure:

- Impacted soil left in place due to infrastructure preventing removal
- Extent of soil contamination is beyond practical limitations for removal
- The remaining impacted soil poses a low risk to groundwater due to previously existing contamination and an ongoing remedial project
- Spills in areas NOT covered by an existing KDHE Bureau of Environmental Remediation (BER) Agreement or Order will NOT be granted conditional closure.

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Spills that CANNOT be cleaned up to below 1000 mg/kg or below the site specific cleanup level, if applicable; AND are not in areas covered by an existing BER Agreement or Order for chloride contamination, will be referred to BER for evaluation.

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# Cleanup Levels

## Standard and Site Specific

Scott Nightingale  
Environmental Specialist  
Longterm Stewardship Unit  
Bureau of Environmental Remediation  
[Scott.Nightingale@ks.gov](mailto:Scott.Nightingale@ks.gov)

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# SOIL TO GROUNDWATER CALCULATION

**Equation 2. Soil to Ground Water Migration Pathway Equation**

$$C_t = C_w \left( (K_d) + \frac{\theta_w + \theta_a H'}{\rho_b} \right)$$

**Equation 2**

Parameter	Definition (units)	Default
$C_t$	Screening level in soil (mg/Kg)	
$C_w$	target soil leachate concentration (mg/L)	Regulatory Standard X DAF
Regulatory Standard	maximum contaminant level (mg/L)	250 (secondary MCL for chloride)
DAF	dilution attenuation factor (unitless)	20
$H'$	Dimensionless Henry's Law Constant	0
$K_d$	Soil-water partition coefficient (L/kg)	0
$\theta_w$	Water-filled soil porosity ( $L_{water}/L_{soil}$ )	0.3
$\theta_a$	Air-filled soil porosity ( $L_{air}/L_{soil}$ )	0.13
$\rho_b$	Dry soil bulk density (kg/L)	1.5

KDHE/BER POLICY 13A - [HTTP://WWW.KDHEKS.GOV/BER/POLICIES/BER\\_RS\\_013A.PDF](http://www.kdheks.gov/ber/policies/ber_rs_013a.pdf)

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# SOIL TO GROUNDWATER CALCULATION

## Equations 3 and 4. DAF and Mixing Zone Depth (d) Equations

$$DAF = 1 + \left( \frac{Kd}{IL} \right)$$

Equation 3

$$d = (0.0112L^2)^{0.5} + d_a \left( 1 - \exp \left[ \frac{-LI}{Kd_a} \right] \right)$$

Equation 4

Parameter	Definition (units)
DAF	dilution attenuation factor (unitless)
K	aquifer hydraulic conductivity (meters/year)
i	hydraulic gradient (meter/meter)
d	mixing zone depth (meters)
I	infiltration rate (meters/year)
L	length of source parallel to ground water flow (meters)
d <sub>a</sub>	saturated aquifer thickness (meters)

KDHE/BER POLICY 13A - [HTTP://WWW.KDHEKS.GOV/BER/POLICIES/BER\\_RS\\_013A.PDF](http://www.kdheks.gov/ber/policies/ber_rs_013a.pdf)

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# SOIL TO GROUNDWATER CALCULATION

Soil Conc. = GW conc. x Dilution Attenuation Factor x  $\frac{\text{Water-filled soil porosity}}{\text{Dry soil bulk density}}$

$$250 \text{ mg/L} \times 20 \times \frac{.3 \text{ L/L}}{1.5 \text{ L/kg}} = 1000 \text{ mg/kg}$$

$$\text{Change in GW conc.} \rightarrow 850 \text{ mg/L} \times 20 \times \frac{.3 \text{ L/L}}{1.5 \text{ L/kg}} = 3400 \text{ mg/kg}$$

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# Questions?

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# Thank you!

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