

United States
Region 6
Environmental Protection Agency
Dallas, TX

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Written Cooperatively by:

Osage Tribal Council

Osage Producers Association

Environmental Protection Agency

Bureau of Indian Affairs, Osage Agency

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Draft

EMERGENCY NUMBERS

National Response Center
1-800-424-8802

Osage UIC Office
918-287-5333

Osage Bureau of Indian Affairs
918-287-5710

Osage Nation Congress
918-287-5448

Emergency Planning Committee
918-287-3980

Local Responders
911

INTRODUCTION

Since the early 1970's, there have been many new local, State and Federal laws that govern our businesses and personal lives involving the use of land, water and air. The penalties for failure to comply with environmental law can be extremely high; therefore, we feel it is necessary for petroleum industry professionals to educate themselves about these many laws and regulations.

This environmental handbook has been compiled for you by the following organizations: Osage Tribal Council, Osage Producers Association, Bureau of Indian Affairs and the Environmental Protection Agency. The Osage Operator's Environmental Reference Manual has additional information and extensive detail. We hope the information provided will be useful in your daily responsibilities of production, protection and preservation. We must also place the following disclaimer on this document since environmental rules and regulations are subject to change and are subject to interpretation by each office of the enforcement agency.

This handbook has been prepared to assist those who must comply with the environmental regulations of Oklahoma and the Federal Government. However, the individuals who participated in the compilation of this handbook and all their employers disclaim all warranties, express or implied. This handbook is not a legal document. The text and advice contained herein should be reviewed by your legal and/or other professional advisors before any use and reliance thereon. Such review should extend to the applicable statutes, regulations and judicial developments in effect and as developed by each jurisdiction up to the time of taking any action in this complex, rapidly changing field.

LIST OF ABBREVIATIONS

BBL	-	Barrels
BIA	-	Bureau of Indian Affairs
BPM	-	Barrels per Month
CDL	-	Compensated Density Log
CFR	-	Code of Federal Regulations
CNL	-	Compensated Neutron Log
CWA	-	Clean Water Act
EPA	-	Environmental Protection Agency
IEL	-	Induction / Electric Log
ISIP	-	Instantaneous Shut-in Pressure
MIT	-	Mechanical Integrity Test
NORM	-	Naturally Occurring Radioactive Material
OPA	-	Osage Producers Association
OTC	-	Osage Tribal Council
P&A	-	Plug and Abandon
PPM	-	Parts per Million
PSI	-	Pounds per Square Inch
PSIG	-	Pounds per Square Inch – Gauge
RCRA	-	Resource Conservation and Recovery Act
REI	-	Radius of Endangering Influence
SDWA	-	Safe Drinking Water Act
SPCC	-	Spill Prevention Control and Countermeasures
TDS	-	Total Dissolved Solids
UIC	-	Underground Injection Control
USDW	-	Underground Safe Drinking Water
ZEI	-	Zone of Endangering Influence

SPILL REPORTING AND AGENCY CONTACTS

1. Spill Reporting

- ◆ All spills of oil and/or saltwater must be reported to the Osage Agency.
- ◆ Any spill of oil and/or saltwater which enters or threatens a waterway (waters of the United States) must be reported to the Osage UIC Office at 918-287-5333.
- ◆ Any oil spill which enters or threatens a waterway must immediately be reported to the National Response Center at 1-800-424-8802.

2. Injection Well Requirements

- ◆ For information on how to apply for a permit;
- ◆ How to complete a permit application;
- ◆ Draft UIC Permits
- ◆ How to comment on Draft UIC Permits, please contact:

Osage UIC Office
PO Box 1495
100 W. Main Street, Suite 304
First National Bank Building
Pawhuska, OK 74056
918-287-5333

Groundwater/UIC Section
US EPA
1445 Ross Avenue
Dallas, TX 75202
214-665-7165

For information on compliance with UIC requirements or permit conditions, regulations or permit requirements, compliance schedules or enforcement orders, inspection policies or procedures or ongoing investigations, please contact the Osage UIC Office at 918-287-5333 or the EPA at 214-665-6470.

3. Spill Prevention and Countermeasures Program (Requirements for Berms around tank batteries.)

Preparedness and Prevention Team
US EPA
1445 Ross Avenue
Dallas, TX 75202
214-665-6485

To report an oil spill into a surface stream call 1-800-424-8802.
For local assistance, call 918-287-5333.

4. Osage Agency Requirements

Minerals Branch
Osage Agency
PO Box 1532
918-287-5710

DRAIN PIPES IN TANK BATTERY PERMS AND PITS

- ◆ General prohibition of drain pipes, with certain exceptions.
- ◆ Allowed on a "case by case" basis and only with an approved permit from the Osage Agency to have a drain pipe in the pit or dike dars.

- ◆ Conditions for use of drain pipe:
 - The overland flow from the drain pipe must be free or produced fluid contamination;
 - Bermed area or pit must be kept clean. Any releases of oil or saltwater must be immediately cleaned up;
 - The drain pipe must have a valve and a lock in place to discourage indiscriminate or accidental opening;
 - The fluid be drained must have a TDS of less than 1,000 PPM and contain no free petroleum product (sheen).
 - Each time fluid is drained from the tank site, a report must be kept available for inspection by either Osage Agency (BIA) or Osage UIC personnel. The report must include:
 - Source, date and time of release;
 - Volume of rainfall runoff to be drained;
 - Verification of TDS and absence of free oil. The TDS data can be obtained using a salinity meter, a hydrometer or by some other chemical analysis. The method of TDS determination may be inspected also.
 - Signature of responsible party.
 - The drain pipe privilege will be revoked if any violation of the guidelines is discovered.

There are penalties which can be levied by the EPA and/or the BIA in the case where the guidelines are not followed. The Clean Water Act (CWA) prohibits the discharge, if the drained storm water is contaminated and reaches a water of the United States.

PREVENTING COMMON POLLUTION PROBLEMS

1. Any discharge of fluids contaminated with salt water or oil to surface waters without an EPA permit is prohibited. Discharge of uncontaminated fluids requires a permit from the BIA, Osage Agency.
2. Tank Batteries
 - Prevent overflow of oil or saltwater tanks.
 - Periodically inspect tanks and equipment to identify potential leaks. Record problems in daily log and complete immediate repairs.
 - Place a drip pan at oil delivery point.
3. Lease pipelines
 - Select pipeline materials appropriate to the fluids and pressures.
 - Regularly inspect pipelines for external corrosion pipeline leaks or weak and/or leaking joints. The frequency of inspection depends on age of pipelines, corrosiveness, pipeline pressure and history of leaks.
 - Clamps should be a temporary repair. Consider replacement for pipelines with frequent leaks.
4. Keep all well sites and tank batteries clean.

REMEDIATION/RESTORATION OF SOIL CONTAMINATED WITH PRODUCED FLUIDS

- ◆ Whenever practical, contaminated soil will be restored to the ability to sustain plant growth.
- ◆ Oil contaminated soils will be treated with nutrient addition in cases of extreme contamination only. Natural bioremediation of petroleum hydrocarbons is expected in almost all cases after the free product is picked up.

- ◆ The conventional flushing-picking up produced fluids from contaminated soils with freshwater may remove enough of the contaminant that further treatment is not necessary. The contaminated site will be observed for a period of time to determine if plant life has been adversely affected. Soil testing may be required in some cases.
 - ◆ Saltwater contaminated soils which are unable to sustain plant growth after flushing with freshwater should be tested to determine the extent of contamination and soil characteristics. After testing, appropriate treatment can be applied. Examples of possible treatments are as follows:
 - Addition of gypsum (CaSO_4) to initiate base exchange.
 - Tilling of the soil to promote moisture infiltration and leaching of the sodium, solubility of the gypsum and promotion of bioactivity.
 - Addition of a bulking agent and nutrient source such as manure or hay.
 - Contouring to prevent erosion.
 - Addition of moisture.
 - Planting of salt tolerant grasses or plants.
 - Fencing of the remediated site to prevent livestock from interfering with the site.
5. There are other less proactive options available depending upon the severity of the contamination.

AUTHORIZED INJECTION ACTIVITIES

1. A well may be used for fluid injection only if authorized by the EPA. Specific requirements depend on whether the well initially became an injection well before or after December 30, 1984.
2. Wells used for injection before December 30, 1984 are referred to as Authorized by Rule (ABR).
 - ◆ Must have been authorized as an injection well by the BIA and been used for fluid injection before December 30, 1984.
 - ◆ Must comply with underground injection regulations.

- ◆ Generally require no permit.
 - ◆ May require an EPA permit application if the following applies;
 - Well was not on list of EPA injection wells prior to July 25, 1987;
 - Injection zone changes;
 - Required injection pressure is above that which is authorized by regulation;
 - There has been habitual violation of regulation requirements.
3. Wells converted/constructed for injection after December 30, 1984:
- ◆ Must obtain an EPA permit before construction/conversion of the well for fluid injection.
 - ◆ Must submit permit application to the Osage UIC office.
 - ◆ May apply for emergency permit with justification. Justification may include:
 - Pollution threat if injection is not allowed;
 - Substantial delay in oil and gas production; and
 - Substantial and irretrievable loss of oil and gas resources.
 - ◆ Must submit permit application at least 45 days prior to use of the well.
 - ◆ Must obtain BIA permit.

DEFINITION OF UNDERGROUND SOURCE OF DRINKING WATER

1. Supplies a public water system;
2. Contains sufficient water to supply a public water system, and
 - a. Is used for water supply for persons; or
 - b. Contains water which has less than 10,000 PPM total dissolved solids.
3. Is not an exempted aquifer.

INACTIVE WELL MONITORING

The plugging deadline for inactive injection wells may be extended if the operator has a plan for future use and assures that ground water contamination will not occur. Ground water protection may be demonstrated by:

1. Demonstrating mechanical integrity of the well, or
2. Monitoring static fluid level of the well.
 - a. Must maintain static fluid level at least 50 feet below base of USDW.
 - b. Must measure static fluid level quarterly as long as it is at least 100 feet below the base of USDWs. Otherwise, monthly monitoring and/or;
 - c. If the static fluid level is less than 50 feet below the base of USDWs, report to the EPA and perform appropriate corrective actions.
3. Fluid level monitoring procedures. No matter which procedure is used, the operator must measure pressure in injection formation. Do not measure annulus fluid level if there is tubing and packer. Fluid level monitoring procedures include:
 - a. Echometer to determine actual static fluid level.
 - b. Mechanical device (wire line, conductivity meter, fishing line and bobber, etc.) to measure actual fluid level in well.
 - c. Run mechanical device to 100 feet below base of USDW and report that the static fluid level is below that depth.
 - d. Run continuous monitoring device 100 feet below base of USDW to detect if fluid rises above the device and measure actual fluid level annually.

Corrective Action	Advantages	Disadvantages
Plug	<ul style="list-style-type: none"> ✓ Removes future contamination threat. ✓ Eliminates maintenance requirements. ✓ Ends plugging liability. 	<ul style="list-style-type: none"> ✓ Well cannot be used for future injection or production.
Convert to Production	<ul style="list-style-type: none"> ✓ Provides income. ✓ BIA jurisdiction. ✓ Provides income to Osage Tribe. 	
Swab Fluid from Well	<ul style="list-style-type: none"> ✓ Fluid level reduced. ✓ Evaluate whether fluid caused by reservoir factors or well plugged. ✓ Holds well for future use. 	<ul style="list-style-type: none"> ✓ Fluid may rise to previous level. ✓ Must continue to monitor fluid level.
Set Bridge Plug	<ul style="list-style-type: none"> ✓ Holds well for future use. 	<ul style="list-style-type: none"> ✓ Continue monitoring requirement. ✓ Plugging liability remains. ✓ Bridge plug may fail.
Demonstrate Mechanical Integrity	<ul style="list-style-type: none"> ✓ Holds well for future use. ✓ Assures that well could be used for injection. ✓ Eliminates fluid level monitoring requirement. 	<ul style="list-style-type: none"> ✓ Plugging liability remains.
Set Bridge Plug & Demonstrate Mechanical Integrity	<ul style="list-style-type: none"> ✓ Holds well for future use. ✓ Assures that well could be used for injection. ✓ Eliminates fluid level monitoring requirement. 	<ul style="list-style-type: none"> ✓ Plugging liability remains.

e. Any other method that would reliably assure that fluids would not move into USDWs. Discuss proposed procedures with Engineer in Osage UIC office before using.

MECHANICAL INTEGRITY TESTING

- 1.** All saltwater disposal or injection wells must pass a mechanical integrity test (MIT) before being used for fluid injection.
- 2.** Any time a packer is moved, reset or released, the well must be retested for mechanical integrity. If the injection zone is changed, the well may need a new permit or permit modification.

3. See "Osage Operator's Reference Manual" for testing procedures or contact the Osage UIC office.
4. Wells that fail the test must be either repaired or shut-in.

PERMIT APPLICATION PROCEDURES

1. An Underground Injection Permit is required before beginning injection well construction or conversion or if a permit is required by the EPA. Permits may be obtained from the Osage UIC office.
2. The permit application should be submitted at least 45 days before the well is needed for fluid injection. If a permit is needed before the 45 day period, an emergency permit may be issued upon request.
3. Permitting process:
 - a. Obtain permit application from the Osage UIC office or the Dallas EPA office.
 - b. Complete the permit application. Be sure to include all items shown on the attached checklist.
 - c. Submit the application to the Osage UIC office.
 - d. The EPA office prepares a draft permit and supplies a copy of such to the applicant for review and/or comment. Be sure to carefully review the draft permit. Submit comments on permit conditions to Dallas EPA.
 - e. After 15 days, if there are public comments, the EPA evaluates the comments, makes necessary changes to the draft permit, prepares a response to comments and issues a final permit. The final permit becomes effective 30 days after issuance.
 - f. If there are no public comments, the EPA prepares the final permit. The final permit then becomes effective on the date of issuance.

4. After issuance of a final permit, the operator may construct the well. Separate "Authorization to Inject" must be received before using the well for fluid injection. Authorization to Inject is a written document to verify that the well meets requirements that must be met before actual fluid injection. To obtain information on the status of a permit application, contact Chief, Groundwater/UIC at 214-665-7165.

PLUGGING AND ABANDONMENT

1. Application to Plug
 - a. Submit Osage Form 139 to the BIA and, if plugging an injection well, submit a copy to the Osage UIC office for engineer approval before plugging the injection well.
 - b. Include outline of plugging procedures or request plugging instructions from the appropriate agency.
 - c. The Form 139 submitted to the BIA must include a filing fee of \$15.00.
2. Injection wells must be plugged within one year after cessation of injection operations unless an extension is approved.
3. Plugging Operations
 - a. Notify the BIA and, if plugging an injection well, the Osage UIC office at least two days before plugging the well so that the plugging can be witnessed.
 - b. FAILURE TO NOTIFY AS REQUIRED MAY RESULT IN THE BIA OR OSAGE UIC OFFICE REQUIRING THE WELL BE REPLUGGED WITH A WITNESS PRESENT.
4. After Plugging Completion
 - a. Cut off casings and restore the surface location, including removal from location.
 - b. Submit an Osage Form 139, including a summary of actual plugging procedures and copies of cement tickets,

to the BIA. If the plugged well was an injection well, submit a copy of the Osage Form 139 to the Osage UIC office as well.

- c. Request an inspection from the BIA. If the well was an injection well, request an inspection from the Osage UIC office.
- d. Only the BIA must be notified if a production well is being plugged.

SECONDARY CONTAINMENT AROUND TANK BATTERY

1. All pits and tank batteries must be included in SPCC Plan.
2. Berm
 - a. Must prevent flow from spilled oil or saltwater from the tank battery area into surface streams. Berm must:
 - i. Surround the tank battery, or
 - ii. Be downhill from the tank battery.
 - b. Must be high enough to hold fluids from the largest tank and a major rainfall event. (Recommend adding 10% to the berm height to allow for rainfall.
 - c. Must hold fluid for 72 hours.
 - i. Must be impermeable. Compact berm materials.
 - ii. Soils in the berm area must be sufficiently impermeable to prevent seepage of water or oil into the ground.
 - d. Properly dispose of accumulated fluids within 24 hours.

NOTE: If the berm is downhill from the tank battery, divert uphill flow from the bermed area.

3. Pit
 - a. Prohibited unless necessary for pollution prevention.
 - b. Must be lined with compacted clay or a 30 ml thick artificial liner.

- c. Must be properly maintained.
 - i. Repair/prevent erosion damage immediately.
 - ii. Prevent animal burrows in the bottom or sides.
 - iii. Keep vegetation from the inside areas.
- d. Cover the pit with a net.
- e. Properly dispose of accumulated fluids within 24 hours.

SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN
40 CFR 112.7

Step 1: Do I Need an SPCC Plan?

Do you have oil storage capacity at this location?

- No – Stop...no plan needed.
- Yes – Proceed to next question.

Is the total oil storage capacity more than 1,320 gallons?

- No – Stop...no plan needed.
- Yes – Proceed to next question.

Is there one or more oil storage containers larger than 660 gallons?

- No – Stop...no plan needed.
- Yes – Proceed to next question.

If there was an oil storage container failure, could the oil get into navigable waters of the U.S. or adjoining shoreline?

- No – Stop...no plan needed.
- Yes – Proceed to next question.

If you answered yes to any of the preceding questions, you MUST have an SPCC Plan! See reference manual for details.

Step 2: Plan Steps

1. Prepare the Plan, following the format in the Osage Operator's Environmental Reference Manual.
2. Plan review by Registered P.E.
3. P.E. Certification that plan meets SPCC criteria.
4. File plan at location of manned at least 8 hours per day.
5. File plan at nearest field office if unmanned.
6. Follow plan criteria, particularly inspections and record keeping.
7. Make plan available to EPA during normal working hours.
8. Update plan every 3 years or sooner if changes occur, or within 60 days of a spill over 1,000 gallons into navigable waters, or 2 reportable spills have occurred in any consecutive 12 months following this amendment procedure discussed in the Osage Operator's Environmental Reference Manual.

EXPLORATION AND PRODUCTION WASTE EXEMPTION

The EPA Resource Conservation and Recovery Act have exempted certain wastes associated with the exploration and production of crude oil, natural gas and geothermal resources from hazardous waste rules. However, the exemption is limited in scope and does not cover all waste material generated in the oil field. EPA recognizes that the oil field produces large volumes of waste that are typically non-toxic or have a low toxicity value. As such, EPA has exempted wastes that are "intrinsic to and uniquely associated with oil and gas exploration". To understand the scope of the exemption, it is necessary to understand the basic principle used by the EPA to distinguish between exempt and non-exempt wastes. A simple rule for determining the scope of the exemption is whether the waste in question has come from down hole or has otherwise been generated by contact with the oil and gas production stream during the removal or produced water or other contaminants from the product. If the answer to either question is yes, the waste is most likely considered exempt.

Examples of exempt waste include produced water, drill cuttings, glycol filters, iron sponge waste, any-hydrate chemicals and drilling fluids. It is important to recognize that the EPA exemption does not apply to transportation wastes. Specifically, the exemption no longer applies after the crude oil has changed custody, or after the crude oil leaves the initial point of oil-water separation in the field.

Exempt wastes generated within the oil field do not need to be tested for hazardous waste characteristics (toxicity, ignitability, reactivity and corrosivity) provided they have not been commingled with non-exempt wastes. This includes spill of crude oil and produced water. This is an important distinction because often times chemicals may be present in the oil field that will cause the exemption to be lost if exempt and non-exempt wastes are commingled, handled incorrectly, or disposed or improperly. For example, paints, solvents, pipe dope, and lube oils may be used at an oil well but they are not considered to be "intrinsic and uniquely" associated with production. Therefore, if waste products from painting are disposed of in a reserve pit, the drill cuttings in the reserve pit lose their exemption and the reserve pit contents must be tested for hazardous characteristics before disposal and the proper disposal method used based on the test. Conversely, pipe dope and lube oil may come into contact with produced water and crude oil during the course of exploration or production activities but this would not generate a non-exempt waste. However, if pipe dope or used lube oil is disposed into an exempt waste stream, then the entire stream must be tested. **Simply stated, mixing an exempt waste with a non-exempt waste would cause the exempt waste to lose its exempt status, and in some instances, could generate a large volume of hazardous waste.** A list of exempt and non-exempt waste is in the Osage Operator's Environmental Manual.

MIGRATORY BIRD PROTECTION

In 1918, the U. S. Congress enacted the Federal Migratory Bird Treaty Act which provides for the controlled harvest and protection of migratory birds. The Act makes the illegal death of any migratory bird a violation of Federal law, punishable by up to \$10,000 in fines and/or criminal prosecution.

The law is enforced by the U. S. Fish and Wildlife Service, a branch of the U. S. Department of the Interior.

The enforcement of this Act has increased in recent years with several operators being found guilty of illegally taking or killing migratory birds which have been injured or killed as a result of contact with oil or saltwater in pits or open tanks. Nearly all birds of the mid-continent area are protected under the Act, including common sparrow.

REQUIREMENTS

Open top tanks and pits of a permanent nature, such as skimming pits or emergency saltwater storage pits which are required to be netted, screened or covered may utilize several different methods.

Open top tanks can be fitted with a solid cover made of wood, steel or fiberglass or can be covered with a screen or net. Chicken wire can be but is cumbersome to work with and does not last very long. Polypropylene netting with a one inch mesh size is a popular installation for open top tanks. The one inch mesh is needed to prevent small birds from getting through the net.

The proper way to cover pits is with the polypropylene net using some sort of tie down and support system to secure the net. A secure net extends the life of the net. Several companies in the area have the capability to furnish and install protective netting. Field personnel can also install the nets in most cases.

NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM)

Naturally Occurring Materials (NORM) are natural materials which spontaneously emit ionizing radiation. NORM is found throughout our environment in things such as building materials, fertilizers, as well as in association with some oil and gas production operations.

Since the primary radioactive element is soluble in water, it is carried in the produced water from the reservoir to the surface. When present, NORM will most commonly be found where scale and sludge deposits in surface equipment such as separators, heater treaters, pumps, and tubing. Therefore, surveys should be conducted on all surface equipment prior to any maintenance activities until it has been determined that NORM is not present from that specific reservoir.

When employees are performing maintenance activities on equipment that may contain NORM, employees should abide by the following:

1. Do not eat, drink, smoke, dip or engage in any other ingesting activities while working on equipment containing NORM until they are removed from the area. Once removed from the area, thoroughly wash face and hands with copious quantities of soap and warm water;
2. Keep open cuts and sores covered;
3. Keep hands away from eyes and mouth while working, even when wearing protective gloves and/or other equipment;
4. Wear appropriate clothing and protective equipment as instructed by health and safety officials.

There are no Federal laws at the time of this printing dealing with NORM. However, this information is presented to raise awareness of the caution if you encounter NORM.