



## Operations: HSE

### Health and Industrial Hygiene

#### GoM Region Sewage and Blackwater Policy



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4	05/03/2018	Revised and Re-Issued	Health Manager	Industrial Hygienist
3	09/04/2018	Revised and Re-Issued	Health Manager	Occupational Health Advisor
2	02/18/2013	Revised and Re-Issued	HSE Director	Health/IH Team Leader
1	03/10/2008	Revised and Re-Issued	HSE Manager	Health/IH Team Leader
0	06/01/06	Initial Issue	HSE Manager	Health/IH Team Leader
Rev	Date	Document Status	Custodian/Owner	Authority

### AMENDMENT RECORD

Amendment Date	Revision Number	Amender Initials	Amendment
05/03/2018	4	VMurray	Document reformatted. Removed requirement for individual to sign the vaccine declination form since vaccinating sewage and blackwater workers is not a regulatory requirement. Updated document custodian to Industrial Hygienist.
09/04/2015	3	MGlencross	Added Tetanus as vaccine requirement to 3.5. Removed Human Immunoglobulin recommendation from 4.3.1. Added References for Vaccine Information Sheets for Tetanus. Declination of Immunization added to 4.4.3.
02/18/2013	2	Health & Industrial Hygiene Team Leader Director of Health and Safety	Changed title from Procedure to Safe Work Practice. Section 1.0-Added reference to OMS. Section 2.0 – Added paragraph regarding exposure to fecally contaminated waste. Section 3.0 – Added new roles for Health/IH TL, Medic, Occ. Health Nurse, Employee and Contractor. Section 4.3 – Changed “should” to “shall” in third and fifth bullet. Deleted Attachment 1-GoM Health Protective Guidance Measures Doc 00129-2-Hepatitis A and made it Appendix 1 without a document #.
03/10/2008	1	Dennis Johnson Curtis Jackson	Attached Hepatitis A guideline to document.
06/01/06	0	Jack Kogut Stan Garner, Curtis Jackson, Steve Tink	Initial issue. Issued and initial posting on the GoM HSSE Website.

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## 1 Introduction

This Policy provides health protection requirements for members of the workforce who have the potential for exposure to effluents and/or wastes from sewage and black water treatment equipment/facilities at BP Gulf of Mexico (GoM) facilities. In addition, this Policy addresses controls to protect personnel who may handle treatment chemicals associated with sewage and black water treatment equipment/facilities.

## 2 Scope

The scope and purpose of this Policy is to define the risks associated with working with sewage and black water treatment equipment/facilities and requirements for reducing and eliminating the potential of disease transmission or chemical exposure to the workforce.

## 3 Key Responsibilities

### 3.1 Offshore Installation Manager (OIM), Supervisor

- A. Responsibility and accountability for implementation of this Policy at their facility.

### 3.2 Supervisor

- A. Verifies that workers are properly trained in recognizing, evaluating and controlling sewage effluent/waste or treatment chemical hazards and ensuring appropriate personal protective equipment or decontamination equipment is available.
- B. Verify workers who maintain marine sanitation devices are informed that Tetanus is recommended and based on potential for exposure, they have the option to receive the Hepatitis A (HAV) vaccine.

### 3.3 Health and Safety (H&S) Site Lead

- A. Assists with requests regarding personal protective equipment use and supply.
- B. Assists with consultation on recognizing, evaluating and controlling sewage effluent/waste and treatment chemical hazards for the site.

### 3.4 Health Manager / Industrial Hygienist

- A. Maintains and is the Subject Matter Expert for this Policy.
- B. Verifies that the practices in this Policy are implemented effectively by conducting industrial hygiene assessments periodically at each facility and corrective actions when necessary are accepted, understood, and completed by site leadership.
- C. Maintains training on sewage and blackwater risks and control measures.

### 3.5 Occupational Health Advisor (i.e., Nurse or Physician)

- A. Consultant for Policy development and updates.
- B. Manages biological contamination medical cases as appropriate.
- C. Provides technical support and advice to workers and Medics.

- D. Verifies that the practices in this Policy are implemented effectively by conducting health assessments periodically at each facility and corrective actions when necessary are accepted, understood, and completed by site leadership

### 3.6 Medic

- A. Provides advice to workforce regarding the immunization provisions of this Policy.  
 B. Provides consultation to site leadership regarding contamination issues.  
 C. Maintains adequate supply and administers HAV and Tetanus vaccine.  
 D. Provides educational information on the vaccine to personnel. A copy of the BP employee's vaccination records shall be updated and forwarded to the BP GoM Occupational Health Nurse. For contractors, the appropriate contractor medical contact shall receive the information.  
 E. Maintains list of workers offered Tetanus and HAV based on potential for exposure using log in Section 7.

### 3.7 Workforce (i.e., Employees and Contractors)

- A. Follow risk assessments and hierarchy of controls when performing jobs with potential for exposure to sewage effluents/wastes and/or treatment chemicals.  
 B. Use administrative controls (e.g., personal hygiene and/or decontamination procedures, as applicable) as a precaution.  
 C. Utilize personal protective equipment (PPE) as a last option when other preventive measures have been taken.  
 D. Completes training on sewage and blackwater risks and control measures.  
 E. May receive the Tetanus and optional HAV vaccines.

## 4 General Requirements

OSHA's General Duty Clause (OSHAct 1970), Hazard Communication Standard (29 CFR 1910.1200) and Personal Protective Equipment standards (29 CFR 1910 Subpart I) require employers to train and educate personnel about the hazards of working with sewage or black water and to provide a clean, safe work environment with the proper facilities and equipment to protect personnel against health risks. Although contact with sewage (not originating directly from a health care facility) poses a number of health hazards, OSHA does not consider these hazards to be related to bloodborne pathogens, therefore the Bloodborne Pathogens standard (29 CFR 1910.1030) does not apply.

## 5 Process

### 5.1 Identification of Hazards and Health Effects

Untreated or partially treated sewage and black water contain bacteria, fungi, parasites and viruses that can cause intestinal, lung, and other infections. During any part of treatment, transport, or application of sewage effluents or sewage; workers have the potential to be exposed to materials that cause disease. Table 1 lists several organisms that may be present as well as typical signs and symptoms of exposure.

Table 1 - Biological Organisms and Signs/Symptoms of Exposure

Bacteria	Salmonella	Nausea, headache, diarrhea and vomiting, Typhoid fever
	Shigella	Muscular stiffness in jaw, neck; sweating, fever

	Tetanus	Cramps, diarrhea, fever, bloody stool, nausea, vomiting
	Leptospirosis	Intestinal problems, liver and kidney disease
	E. coli	Diarrhea, vomiting, little or no fever, blood in stool
<b>Virus</b>	Hepatitis A (HAV)	Fever, abdominal pain, nausea, jaundice, dark urine
	Hepatitis B (HBV)	Nausea, vomiting, loss of appetite, jaundice, joint pain
	Human immunodeficiency virus (HIV)	Destroys immune system, prone to opportunistic infections
	Polio	Fever, headache, nausea, muscle pain and paralysis
<b>Parasites/Protozoa</b>	Entameoeba histolytica	Mild nausea, loose stool, abdominal tenderness and in severe cases can spread throughout body and other organs, esp. liver
	Giardia lamblia	Cramps, weight loss, loose/greasy stool, bloating

In general, studies have not shown higher disease infection rates for sewage effluent handlers compared to similar populations of workers not exposed to sewage (*Center for Disease Control*). Although no occupational outbreaks of HAV in the US have been reported among workers exposed to sewage, the risk of HAV infection in sewage workers is not well documented. The risk of contracting HBV or HIV from sewage exposure is 'virtually non-existent' and studies have not shown an increase risk for workers handling sewage.

## 5.2 Routes of Exposure

The primary route of exposure to the biological hazard organisms is hand-to-mouth contact. This can occur during eating, drinking or smoking, or by touching the face with contaminated hands or gloves. Inhalation of aerosols containing microorganisms is a less-common method of entry. Airborne bacteria concentrations are typically highest wherever sewage is agitated, such as near incoming wastewater inlets that are open to atmosphere. Skin absorption is unlikely unless the skin has been previously damaged by cuts, blisters, burns or puncture wounds. Mucous membranes (such as in the eyes and nose) may also provide a route of entry for certain organisms.

The primary routes of exposure to treatment chemicals are via respiratory or skin contact. Generally, treatment chemicals are disinfectants with corrosive properties, such as chlorine (liquid, dry or gas). If sewage or black water treatment equipment/facilities include sludge tanks, the possibility of hydrogen sulfide accumulation exists, which is a respiratory hazard.

## 5.3 Controlling Exposure and Managing Risks

Although the risk of infection of personnel handling sewage and black water appears to be low, workers should take precautions to minimize risks. Workers should assume that sewage treatment associated surfaces are contaminated with potentially infectious materials and use precautions when working in wastewater areas. The following are several safeguards.

- A. Avoid direct contact with raw sewage.

- B. Avoid aerosolizing sewage water and minimize exposure time in areas where this is occurring (bacteria levels are highest where the water is agitated).
- C. Use PPE such as waterproof gloves, boots and eye/face protection when there is direct contact with raw sewage. Face shields shall be used where splashing is anticipated. PPE shall be decontaminated after use (cleaned with soap and hot water - 160°F – after each use) or disposed of. Skin protection is especially important when open wounds/cuts are present.
- D. Wash reusable clothing commercially at high temperatures (160°F) to ensure that organisms are destroyed.
- E. Keep contaminated clothing and PPE away from smoking and/or eating and food storage areas. Laundry personnel shall be told that clothing has been contaminated.
- F. Wear respirators when necessary. In most cases, respirators will not be necessary for protection against biological organisms; however, it is recommended that a disposable dust mask be worn in dusty sludge areas or areas with heavy aerosols. Supplied air respirators may be necessary if chlorine gas is used as a treatment chemical or if hydrogen sulfide accumulation may occur (e.g., if a sludge tank is present as part of the treatment equipment).
- G. If the hazard of hydrogen sulfide accumulation is present (e.g., a sludge tank is used in the treatment process) testing shall be conducted before servicing/opening the sludge tank for hazardous levels of hydrogen sulfide.
- H. Follow good personal hygiene practices:
  - a. Wash hands and face regularly with soap and water, especially before eating, smoking and drinking, and at the end of the shift;
  - b. Keep hands away from nose, mouth, eyes and ears;
  - c. Keep fingernails short; and
  - d. Shower daily.
- I. Clean, treat and report any cuts or punctures immediately. Consider wounds as potentially infected.
- J. Disinfect work areas if a spill occurs and make the appropriate notifications.

## 5.4 Post-Exposure

Exposed individuals shall notify their Supervisor or Medic should an exposure occur. BP incident reporting guidelines shall be followed at the time of exposure.

Potential exposure to HAV via contact with a contaminated source shall be reviewed by a physician for consideration of post exposure HAV and other treatment (wound care, antibiotics). Baseline serologic blood testing and follow up blood testing is typically not performed for low level exposures to human waste. For waste water, there is negligible risk for Hepatitis B (HBV) or Human Immunodeficiency Virus (HIV). Also, Hepatitis Immune globulin is typically not required post exposure in previously unvaccinated individuals due to low risk of contracting HAV in U.S. waste water workers.

## 5.5 Worker Training, Immunizations, and Declinations

### 5.5.1 Worker Training

Personnel who have been exposed to fecal containing waste in GoM locations such as personnel who work with marine sanitation devices (MSD's) may be offered the Tetanus and Hepatitis A vaccination and information on vaccine preventable disease. If further clarification of this guideline is needed, contact the Medic or GoM Occupational Health Nurse.

Individuals shall receive training and information initially upon assignment and as required based on the specific tasks that they are assigned on site. Training shall be provided online via My Talent and Learning and by the Medic and shall include as a minimum:

- A. Types of biological organisms and treatment chemicals that are a risk to personnel;
- B. Routes of exposure;
- C. Symptoms of disease or exposure illness;
- D. Facility-specific risk areas/tasks;
- E. Importance of personal hygiene;
- F. PPE use (when used; which pieces of equipment; maintenance of equipment; decontamination of equipment); and
- G. First aid/medical attention directives, including incident and injury/illness reporting.

### ***5.5.2 Immunizations***

Vaccinations may be offered for Tetanus and HAV to provide optimal protection for the potential of exposure. It should be noted that neither HAV nor HBV immunizations are specifically recommended for waste water workers by the Center for Disease Control. The Center for Disease Control has reported that personnel working with sewage are not at higher risk of contracting HBV or HAV based on scientific study. HAV and HBV vaccine may be recommended in some adults and children due to their own personal health or travel risks. Many healthy adults and children are also vaccinated for these diseases as a matter of best health practice and prevention.

Personnel handling sewage should consult their Supervisor, the Medic or the BP GoM Occupational Health Nurse if they have any questions or if they have unprotected exposure to raw sewage.

### ***5.5.3 Declination of Immunization***

If exposed, medical professionals (i.e., Medic or Occupational Health Advisor) may make recommendations for specific individuals to receive post exposure immunization against HAV. Following a medical recommendation and receipt and review of the VIS (Section 7), the individual should be given an opportunity to ask any questions regarding immunization. If the individual declines the recommended immunization for HAV, the vaccination consent/declination form shall be completed (Section 7). Individuals who refuse to complete the vaccine consent/declination form will be referred to the GoM Occupational Health Nurse.

## 6 Definitions/Acronyms

Terms	Description
Hepatitis A	A highly infectious virus in human stool, Hepatitis A causes liver inflammation. It is the most common reason for acute liver failure leading to liver transplantation. In some continents (ex. Africa) or where there is poor sanitation, contaminated water or food (ex. onions, berries, shellfish), the vast majority of the population has been infected as children. Two adult doses of vaccine are recommended for 25 yrs. of protection.
Hepatitis B	A highly infectious blood borne virus, Hepatitis B infects 30% of non-immune (ex. unvaccinated) individuals when they are exposed. Liver disease, cirrhosis and increased liver cancer results from infection. In adults, 2-10% of infected individuals become carriers of the virus and unknowingly infect family members. A minimum of three doses of vaccine are recommended to protect from the disease. Vaccination provides 100% lifetime protective for those who have good vaccine response (most persons).
Tetanus	A bacteria found everywhere in soil, dust, and manure. The bacteria enters through wounds, injured tissue and cause "lockjaw" which then spreads to painful tightening of muscles and up to 20% death rates, even with state of the art medical care. Vaccination is recommended every 10 years for optimal protection.

## 7 Key Documents/Tools/References

Vaccine Consent/Declination Form



Hepatitis Tetanus  
Vaccine Consent Decl

Vaccination Offering Log



Appendix%20Vaccination%20Offering

- A. Center for Disease Control, *Biological Hazards Sewage and Wastewater Treatment: Hazard Alert*  
<http://www.cdc.gov/elcosh/docs/d0200/d000283/d000283.pdf>
- B. OSHA 29 CFR 1910.1200, Hazard Communications Standard  
[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=10099](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10099)

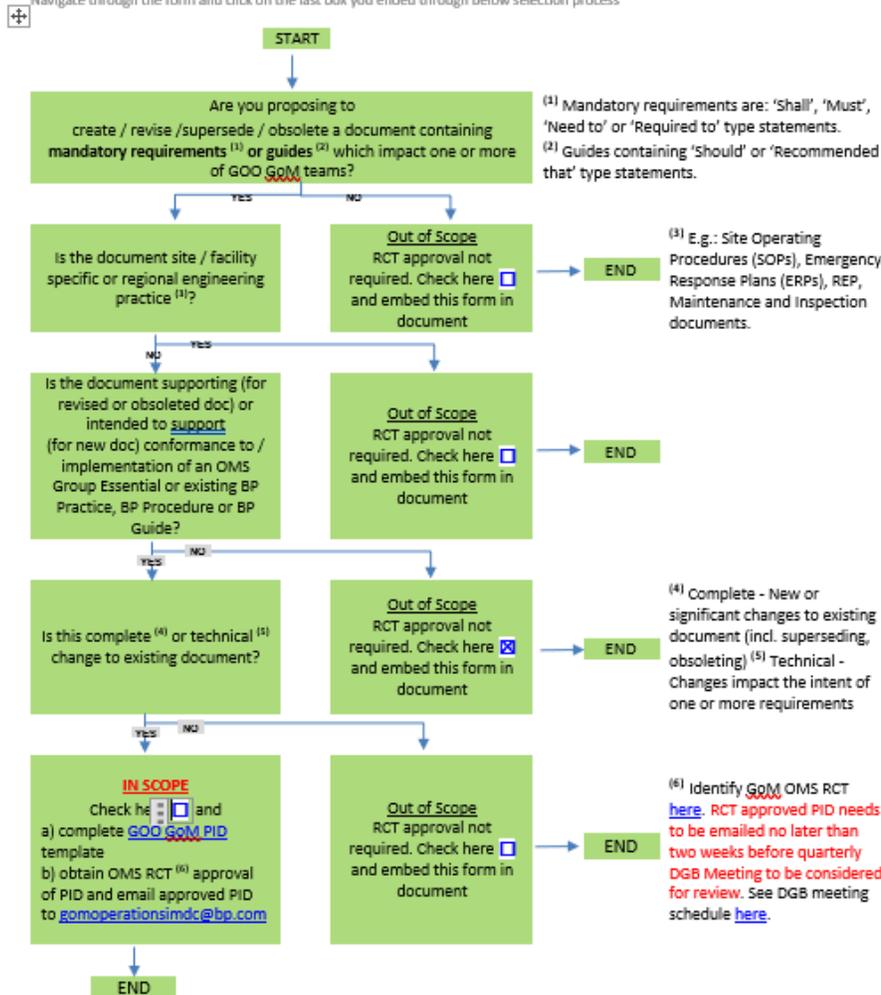
- C. OSHA Act 1970, General Duty Clause  
[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=OSHA&p\\_id=3359](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=OSHA&p_id=3359)
  
- D. Center for Disease Control, *Viral Hepatitis-Hepatitis A Information*  
<http://www.cdc.gov/hepatitis/hav/>
  
- E. Center for Disease Control, *Tetanus*  
<http://www.cdc.gov/tetanus/index.html>
  
- F. Vaccine Information Sheet (VIS)  
<http://www.cdc.gov/vaccines/hcp/vis/index.html>
  
- G. Center for Disease Control, *Adult Immunization Schedule*.  
<https://www.cdc.gov/vaccines/schedules/downloads/adult/adult-combined-schedule.pdf>

# Gulf of Mexico



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Title of Document:	Document Lifecycle Form	Document Number:	2020-T2-DM-FM-0018
Authority Title:	Quality and IMDC Manager	Revision Number:	0
Custodian/Owner Title:	IMDC and GOC Coordinator	Revision Date:	10/23/2017
Retention Code:	AUD020	Next Review Date (if applicable):	12/19/2021
Security Classification:	BP Internal	Original Issue Date:	10/23/2017
Function:	Regional	OMS Sub Element:	4.1
		Page:	Page 1 of 2

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