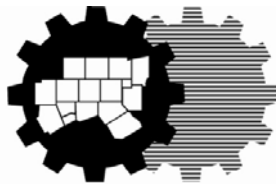


Preventing Stormwater Pollution ***What We Can Do***

Employee Training
Recognizing and Reporting Illicit Discharges

Instructor's Guide
2012



North Central Texas
Council of Governments

Prepared in Cooperation with the North Central Texas
Regional Stormwater Management Program

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About This Guide and PowerPoint Training Module

This Instructor's Guide was developed through the North Central Texas Regional Stormwater Management Program to support the employee training PowerPoint module for "Recognizing and Reporting Illicit Discharges." It is intended to describe the material presented in the PowerPoint module and provide the instructor with additional speaking points. The PowerPoint module supplements the "Preventing Stormwater Pollution: What We Can Do" employee training series developed in 2005 to assist local municipalities with training their employees on stormwater pollution prevention.

Training Guidelines

Under the Texas Pollutant Discharge Elimination System (TPDES) program, Phase I and Phase II municipal separate storm sewer systems (MS4s) must detect and eliminate illicit discharges to the MS4. Training municipal staff on illicit discharge detection and elimination (IDDE) can help Phase I MS4s meet this requirement, and is specified under the 2012 Phase II MS4 General Permit. The PowerPoint training module and accompanying Instructor's Guide were developed to provide a method for training municipal field staff who may come into contact with or otherwise observe an illicit discharge or illicit connection to the storm sewer system while performing their normal job responsibilities. Staff who manage or oversee aspects of the municipality's stormwater program, or designated trainers who have gone through the proper training, can teach the contents of the module to employees who may or may not be involved in or familiar with the municipality's stormwater program.

Prior to training municipal staff, the instructor should become familiar with the Instructor's Guide and with the activities performed by the department staff to be trained. The instructor should also become familiar with the municipality's Stormwater Management Program (SWMP) that was developed in accordance with TPDES MS4 permit requirements. The instructor is encouraged to tailor the training module and guide to provide additional information that is specific to the municipality.

The municipality may want to create employee training procedures for each department receiving this training. The procedures, which must be based on the activities outlined in the municipality's SWMP, should provide additional details to instructors and managers and may include schedules, forms for recording training attendance, and other training-related details. The municipality must maintain training program materials and attendance lists on site and make available to the Texas Commission on Environmental Quality (TCEQ). A sign-in sheet template (Appendix A) and certificate of attendance template (Appendix B) were created to help the municipality maintain training records.

Learning Objectives

At the end of this training, employees should be able to understand:

- The terms "stormwater" and "illicit discharge"
- Why these terms are important and why they should care
- What they can do to help prevent stormwater pollution
- How to recognize and report illicit discharges (pollution)

Materials Needed

The following materials may be needed for the training:

- Sign-in sheet to record attendance
- Copies of the PowerPoint training module with space to take notes
- Writing utensils
- Certificates of attendance to be distributed after the training
- Prizes for answering questions correctly

Length of Training

The training can take anywhere from 30 minutes to one hour. Using the training module as is should take the instructor about 30 minutes to go through. The training may take longer if additional information is added or if questions are asked by attendees. It is recommended that the instructor practice the training beforehand to determine a length that works best for his/her needs. The instructor may wish to train employees during their lunch hour and invite them to bring a bag lunch.

PowerPoint Training Module Instructor Details

The information presented in the sections below corresponds to the information presented in the PowerPoint training module and is identified by the PowerPoint slide number. Instructors should keep in mind that slide numbers and content may vary if additional information is added to the PowerPoint. Each section includes some discussion points to help the instructor encourage participation. Prizes could be distributed to those who participate in discussions and answer questions correctly.

Introduction

Slide 2

The goals of the training module are to help employees understand:

- The terms "stormwater" and "illicit discharge"
- Why these terms are important and why they should care
- What they can do to help prevent stormwater pollution
- How to recognize and report illicit discharges (pollution)

Discussion Points:

Conduct an oral pre-test to determine employees' knowledge. For example, ask employees to raise their hand if they are able to define the terms "stormwater" and "illicit discharge" or ask for someone to define these terms.

Instructor Notes:

About Stormwater

Slides 3 and 4

When it rains, water that does not soak into the ground becomes runoff. Water can runoff land (e.g., lawn) or impervious surfaces (e.g., paved streets, parking lots, building rooftops, etc.) and enter a storm sewer system which ends up in local streams, creeks, rivers, and lakes.

As runoff flows over land or impervious surfaces, it accumulates debris, chemicals, sediment, or other pollutants that cause damaging water quality problems. In North Central Texas, stormwater runoff is not treated or cleaned before it is discharged into local streams, creeks, rivers, and lakes. For example, grass clippings blown or swept in the street can wash into a nearby storm drain during a storm or from irrigation runoff, and are then discharged directly into a local waterway.

Discussion Points:

Explain the impact that grass clippings can have on a local waterway. For example, as grass clippings break down or decompose in a local creek, stream, river, or lake, oxygen is required. Aquatic life, like fish, need oxygen to survive. If oxygen levels become too low in the body of water, fish and other aquatic life cannot survive. If too many grass clippings are washed or dumped down a storm drain, the storm drain may become clogged. The next time it rains, or the sprinklers run, the water that would normally flow down the storm drain could be blocked by the grass clippings and cause flooding.

Ask employees to name other common contributors to stormwater pollution. Examples include pet waste, fertilizers, litter, sediment, tree leaves, oil, chemicals, etc. Discuss some local experiences.

Instructor Notes:

About Illicit Discharges

Slides 5 and 6

An illicit discharge is defined as any discharge to the storm sewer system that is not composed entirely of stormwater. The following non-stormwater sources may be discharged from the storm sewer system and do not need to be addressed in a municipality's stormwater program unless they are determined to be significant contributors of pollutants or they are otherwise prohibited by the municipality:

1. Water line flushing (excluding discharges of hyperchlorinated water, unless the water is first dechlorinated and discharges are not expected to adversely affect aquatic life)
2. Runoff or return flow from landscape irrigation, lawn irrigation, and other irrigation utilizing potable water, groundwater, or surface water sources
3. Discharges from potable water sources that do not violate Texas Surface Water Quality Standards
4. Diverted stream flows
5. Rising ground waters and springs
6. Uncontaminated ground water infiltration
7. Uncontaminated pumped ground water
8. Foundation and footing drains
9. Air conditioning condensation
10. Water from crawl space pumps
11. Individual residential vehicle washing
12. Flows from wetlands and riparian habitats
13. Dechlorinated swimming pool discharges
14. Street wash water excluding street sweeper waste water
15. Discharges or flows from emergency fire fighting activities (fire fighting activities do not include washing of trucks, runoff water from training activities, test water from fire suppression systems, and similar activities)
16. Other allowable non-stormwater discharges listed in 40 CFR § 122.26(d)(2)(iv)(B)(1)
17. Non-stormwater discharges that are specifically listed in the TPDES Multi Sector General Permit (MSGP) TXR050000 or the TPDES Construction General Permit (CGP) TXR150000
18. Discharges that are authorized by a TPDES or National Pollutant Discharge Elimination System (NPDES) permit or that are not required to be permitted
19. Other similar occasional incidental non-stormwater discharges such as spray park water, unless the TCEQ develops permits or regulations addressing these discharges

The above exceptions are grouped to help instructors' better explain those activities and sources that may be exempt from stormwater permit requirements:

- Discharges from certain operations (i.e., water line flushing, street wash water, discharges or flows from emergency fire fighting activities) – exceptions apply (1, 14, 15)
- Certain discharges from landscapes/lawns (i.e., runoff or return flow from landscape irrigation, lawn irrigation, and other irrigation utilizing potable water, groundwater, or surface water sources) (2)
- Discharges from potable water sources (that do not violate water quality standards) (3)
- Certain discharges from waterways (i.e., diverted stream flows, rising ground waters and springs, flows from wetlands and riparian habitats) (4, 5, 12)

- Uncontaminated infiltrated or pumped ground water (6, 7)
- Certain discharges from buildings (i.e., foundation and footing drains, air conditioning condensation, water from crawl space pumps) (8, 9, 10)
- Certain discharges from residential/commercial activities (i.e., individual residential vehicle washing, dechlorinated swimming pool discharges) (11,13)
- Allowable non-stormwater discharges listed in federal or state permits or regulations and occasional incidental non-stormwater discharges not permitted or regulated (16, 17, 18, 19)

Illicit discharges are also defined as a storm drain that has measurable flow during dry weather containing pollutants and/or pathogens. A storm drain with measurable flow but containing no pollutants is simply considered a discharge. For the purposes of this training, illicit discharges will be referred to as "pollution." Anything entering a storm sewer system flows untreated to a local waterway and so it is important to keep pollutants out.

Discussion Points:

Ask employees if they have ever heard of the term "illicit discharges" and if they recall observing any while out in the field. Emphasize that for the purposes of this training, illicit discharges will be referred to as "pollution."

Mention that the non-stormwater sources listed are presented to show that there are exceptions to what can be discharged to the storm sewer system. The bottom line is, if a suspicious flow is observed, report it and inspectors will investigate the flow to determine its source.

List some common sources of pollution and ask employees to add to this list. Examples include: illicit connections (e.g., floor drain connected to the storm sewer system rather than the sanitary sewer system or a sanitary sewer pipe connected to the storm sewer system), failing septic systems, illegal dumping practices, spills that enter the storm sewer system, etc.

Instructor Notes:

The Big Deal
Slide 7

We use local waterways for swimming, fishing, boating, and as a source of drinking water. Pollution can limit these recreational activities and foul drinking water sources.

In addition, many municipalities across the Dallas-Fort Worth Metroplex are required to prevent pollutants from entering the storm sewer system. These regulated municipalities have a TPDES permit that authorizes them to discharge stormwater directly to surface waters of the state through their MS4 in accordance with conditions set forth in the permit. Each regulated municipality is required to develop and implement a SWMP to reduce the contamination of stormwater runoff and prohibit illicit discharges. Training municipal staff on pollution prevention measures can help the municipality reduce stormwater pollution.

Discussion Points:

Explain some of the ways pollution can limit recreational activities and foul drinking water sources and ask employees for input. For example, pollution can cause a decline in fish populations or make them unsafe for consumption. This would impact recreational fishing opportunities. Pollution can also make the water too dirty for swimming leading to temporary or permanent closings. While our drinking water is treated before it reaches the faucet, pollution impacts the cost to treat the water as well as the effectiveness. These costs are then passed on to the consumer.

Mention the history of the municipality's stormwater program and some of the other elements (e.g., public education, pollution prevention for municipal operations, etc.) that must be addressed in the SWMP. Employees, even those who do not work in the municipality's stormwater program, play a large role in helping the municipality comply with these state regulations by doing their part to prevent and report pollution while performing their normal job responsibilities.

Instructor Notes:

Ways to Prevent Stormwater Pollution

Slides 8, 9, and 10

Employees can help prevent stormwater pollution by preventing pollutants from being dumped or spilled into the storm sewer system (this includes driveways, sidewalks, streets, and storm drains) and by reporting pollution or questionable discharges to the storm sewer system or local waterways to the appropriate person. These discharges may result from something being spilled, dumped, or washed, either indirectly or directly, in the driveway, sidewalk, street, parking lot, drainage ditch, or storm drain.

Preventing Pollution

Employees can help prevent pollutants from being dumped or spilled into the storm sewer system by storing and handling materials safely, cleaning up spills properly, and never dumping or washing out items down or near a storm drain.

Discussion Points:

Briefly explain how employees can help prevent pollution by bringing in examples from the "Preventing Stormwater Pollution: What We Can Do" employee training series. For example, the following activities can help employees prevent stormwater pollution during their daily operations. Discuss the activities performed by the department staff to be trained and involve them in the discussion by asking them to name some of these activities.

- **Construction Activities and Land Disturbances**
(e.g., properly install and maintain best management practices to reduce soil erosion and sediment loss; use covered trash receptacles for disposing trash and debris; etc.)
- **Fleet Maintenance and Material Handling**
(e.g., regularly inspect for leaks or stains around vehicles and equipment; clean parts indoors and properly dispose of fluids, grease, dirt, and other debris cleaned from parts; do not hose down outside work areas; wash equipment and vehicles only in designated facilities where the wash water drains to the sanitary sewer system or is collected and recycled; etc.)
- **Streets and Drainage Maintenance**
(e.g., require concrete trucks to wash out in a designated location where wash water will not drain to a storm drain, drainage ditch, or creek; do not apply street paint when rain is likely or during high winds; dispose of trash and debris removed from inlets in a sanitary landfill; cover soil stockpiles and/or apply other best management practices to prevent erosion; etc.)
- **Parks and Grounds Maintenance**
(e.g., use native or adapted plants to reduce water, fertilizer, and pesticide needs; avoid over-watering to prevent excess runoff; leave grass clippings on the lawn or compost; limit erosion by planting vegetation on bare areas and using mulch or matting for landscape areas; follow safety, storage, and disposal procedures for pesticides and herbicides; etc.)
- **Solid Waste Management**
(e.g., pick up spilled trash from around trash cans or bags; use litter screens to catch windblown trash around transfer stations and drop off centers; etc.)

More information about the "Preventing Stormwater Pollution: What We Can Do" employee training series may be found at www.dfwstormwater.com.

Reporting Pollution

Employees who work in the field on a regular basis (e.g., inspectors, code compliance staff, public works and park maintenance staff, *or insert the job descriptions from your own agency*) are the eyes and ears of the municipality. Employees who see pollution entering the storm sewer system or see someone dumping something down the storm drain should report it to the appropriate contact. Any discharge to the storm sewer system that is not composed entirely of stormwater is pollution.

Discussion Points:

Employees may see different types of pollution depending on where they are working in the field. See Table 1 for a list of potential discharge-producing activities by land use and the sites likely to generate these discharges. These discharges may or may not contain pollutants or pathogens and/or may be an acceptable discharge to the storm sewer system; however, instructors may wish to make employees aware of the discharge-producing activities they may observe in the field.

Table 1: Potential discharge-producing activities by land use and the sites likely to generate these discharges

Land Use by Sector	Generating Sites	Discharge-Producing Activities
Residential	<ul style="list-style-type: none"> • Apartments • Multi-family • Single family 	<ul style="list-style-type: none"> • Car washing • Driveway cleaning • Dumping/spills • Equipment washdowns • Lawn/landscape watering • Septic system maintenance • Swimming pool discharges
Commercial	<ul style="list-style-type: none"> • Campgrounds/RV parks • Car dealers/car rentals • Car washes • Laundry/dry cleaning • Gas stations/auto repair • Marinas • Nurseries/garden centers • Oil change shops • Restaurants • Swimming pools 	<ul style="list-style-type: none"> • Building/parking lot maintenance • Dumping/spills • Landscape/grounds care • Outdoor material storage • Vehicle fueling/washing • Vehicle maintenance/repair • Grease trap/equipment cleaning

Land Use by Sector	Generating Sites	Discharge-Producing Activities
Industrial	<ul style="list-style-type: none"> • Auto recyclers/scrap yards • Beverage makers/breweries • Construction vehicle washouts • Distribution centers • Food processing • Garbage truck washouts • Boat building and repair • Metal plating operations • Paper and wood products • Petroleum storage • Printing 	<ul style="list-style-type: none"> • All commercial activities • Industrial process water or rinse water • Loading and unloading area washdowns • Outdoor material storage
Institutional	<ul style="list-style-type: none"> • Cemeteries • Churches • Corporate campuses • Hospitals • Schools and universities 	<ul style="list-style-type: none"> • Building/parking lot maintenance • Dumping/spills • Landscaping/grounds care • Vehicle washing
Municipal	<ul style="list-style-type: none"> • Airports • Animal shelters • Landfills • Maintenance depots • Municipal fleet storage areas • Public works yards • Streets and highways 	<ul style="list-style-type: none"> • Building/parking lot maintenance • Dumping/spills • Landscaping/grounds care • Outdoor materials storage • Road maintenance • Spill prevention/response • Vehicle fueling/washing • Vehicle maintenance/repair

Instructor Notes:

Examples of What to Report

Slides 11, 12, 13, 14, 15, and 16

Instructors may wish to customize the PowerPoint slides that relate to this section by using pictures specific to the municipality.

Pollution Entering the Storm Sewer System

Employees should be on the lookout for solids and liquids that are spilled, dumped, or washed, either indirectly or directly, in the driveway, sidewalk, street, parking lot, drainage ditch, or storm drain. Examples of what to report may include (possible sources are in parentheses):

- Dirty water in the street (e.g., sediment runoff from a construction site)
- Washout of solids/liquids (e.g., concrete, paint, oil)
- Unusually colored discharges (e.g., milky white, red, purple, blue, black, green)
- Improper disposal of solids/liquids (e.g., grass clippings blown down a storm drain or left in the street, oil dumped down a storm drain)
- Leaks (e.g., around dumpsters, cars)

Discussion Points:

Mention that this is not an exhaustive list of discharges to report. Ask employees to list additional examples of what they think should be reported.

Instructor Notes:

Pollution Coming Out of a Pipe or in a Local Waterway

Generally, if it has not rained in 48 hours, a storm drain should not be flowing; however, not all dry weather flows contain pollutants or pathogens. Employees who see warning signs of pollution coming out of a pipe or in a local waterway should report it to the appropriate contact. Warning signs may include the presence of unusual:

- Color
- Odor
- Turbidity
- Floatable liquids and solids

Color

The water colors listed in Table 2 are possible indicators of pollution. Possible sources are also listed to give employees an idea of what may be causing these colors. Employees who observe these or other unusual colors in local waterways or coming out of a pipe should report the findings to the appropriate contact.

Table 2: Water colors and possible sources of pollution

Color	Possible Sources
Tan to light brown	Suspended sediments common after rainfall; runoff from construction, roads, agricultural/rangeland; soil erosion caused by vegetation removal
Pea green, bright green, yellow, brown, brown-green, brown-yellow, blue-green	Algae or plankton bloom (color depends on type of algae or plankton); sewage, fertilizer runoff, vehicle wash water
Tea/coffee	Dissolved or decaying organic matter from soil or leaves; commonly associated with tree overhangs, woodlands, or swampy areas
Milky white	Paint, lime, milk, grease, concrete, swimming pool filter backwash
Milky or dirty dishwater gray	Gray water or wastewater
Milky gray-black	Raw sewage discharge or other oxygen-demanding waste
Clear black	Caused from turnover of oxygen-depleted waters or sulfuric acid spill
Dark red, purple, blue, black	Fabric dyes, inks from paper and cardboard manufacturers
Orange-red	Leachate from iron deposits; deposits on stream beds often associated with oil well operations

Color	Possible Sources
White crusty deposits	Common in dry/arid areas or during periods of low rainfall where evaporation of water leaves behind salt deposits; also found in association with brine water discharge from oil production areas

Although some of these unusual colors may have a natural cause (e.g., orange-red water is often associated with a natural source), it is better that employees report the presence of unusual water color for further investigation.

Odor

Employees who notice an unusual odor emanating from a local waterway or pipe should report the type of odor and its severity to the appropriate contact. Some odors are an immediate indicator of pollution (e.g., sewage, gasoline, chemical odors) and should be reported. Table 3 lists some odors to be concerned about and their general causes. Other unusual odors present not listed should also be reported.

Table 3: Water odors and general causes of pollution

Odor	General Causes
Rotten eggs/hydrogen sulfide	Raw sewage, decomposing organic matter, lack of oxygen
Chlorine	Wastewater treatment plant discharges, swimming pool overflow, industrial discharges
Sharp, pungent odor	Chemicals or pesticides
Musty odor	Presence of raw or partially treated sewage, livestock waste
Gasoline, petroleum	Industrial discharge, illegal dumping of wastes, wastewater
Sweet, fruity	Commercial wash water, wastewater

Turbidity

Turbidity is a measure of the cloudiness of water. The more cloudy the water, the more turbid it is. Pollution may be present if highly turbid water is observed in a local waterway or coming out of a pipe and should be reported to the appropriate contact. Causes of high turbidity may include:

- Soil erosion
- Runoff from a rain event
- Algae blooms
- Bottom sediment disturbances by aquatic life
- Construction or dredging
- Waste discharge

Floatable liquids and solids

Sewage, oil sheen, and suds are examples of floatable indicators of pollution that should be reported to the appropriate person. Bacteria (e.g., sewage fungus) floating in the water or growing on hard surfaces may be observed if sewage is present. If sewage is suspected, employees should always report this finding for further investigation. Sheens and suds may be naturally occurring or may be the result of polluted discharges. Natural sheens form a sheet-like film that breaks if disturbed while synthetic sheens do not. Sheens that form a swirling pattern are likely the source of a synthetic product like oil or other fuel type. Suds resulting from a polluted discharge may have thick foam that travels for many feet before breaking up. Suds that break up quickly may simply reflect water turbulence. Employees should use their best judgment when reporting the presence of sheens and suds—if a floatable looks suspicious, report it.

Trash and debris, although more typically known as “floatables,” are not generally indicators of polluted discharges. Excessive amounts of trash and debris should be reported as they are unsightly and can cause damaging water quality problems. Leaves and grass clippings present in a local waterway may indicate the illegal disposal of yard waste and should also be reported.

Discussion Points:

Mention that this is not an exhaustive list of discharges to report. Ask employees to list additional examples of what should be reported. Share other examples or ask employees to share examples of what they have observed in the field.

Instructor Notes:

How to Report Pollution

Slide 17

Employees who observe pollution entering the storm sewer system, see someone dumping something down the storm drain, or see warning signs of pollution coming out of a pipe or in a local waterway should report their findings to the appropriate contact. Employees should include the following information in their report so staff can locate the pollution and conduct an investigation to verify if pollution is present and identify its source(s):

- Specific location
- Date and time
- Description of the pollution
- Description of the violator, e.g., license plate number, personal description (if applicable)
- Contact information
- Picture (if available)

Discussion Points:

Ask employees to summarize what they learned or offer a summary of what they should have learned. For example, stormwater pollution as a result of illicit discharges has a major impact on our local waterways. Certain municipalities in the region are required to protect local waterways and municipal employees can play an important role in protecting stormwater by preventing stormwater pollution during their daily operations and reporting pollution observed in the field. Instructors may wish to review the goals of the training and conduct an oral post-test to determine what employees have learned.

Instructor Notes:

Resources

The following resources/web sites should be consulted if additional information is needed about illicit discharges. Instructors should add additional resources to this list (e.g., municipality resources, etc.).

NCTCOG, "Illicit Discharge Detection and Elimination Field Investigation Guide,"
www.dfwstormwater.com

Texas Commission on Environmental Quality, Municipal Separate Storm Sewer System
Program, www.tceq.texas.gov

U.S. Environmental Protection Agency, Illicit Discharge Detection and Elimination Program,
www.epa.gov

Center for Watershed Protection, "Illicit Discharge Detection and Elimination: A Guidance
Manual for Program Development and Technical Assessment," www.cwp.org

Appendix A
Sign-In Sheet Template

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Employee Training: Recognizing and Reporting Illicit Discharges
Sign-In Sheet
Instructor's Name
Date
Time
Location



Name	Position	Department	Email	Phone Number

Name	Position	Department	Email	Phone Number

Appendix B
Certificate of Attendance Template

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CERTIFICATE OF ATTENDANCE

<Municipality Name>
in cooperation with the North Central Texas Council of Governments'
Regional Stormwater Management Program

This certifies that
<NAME OF ATTENDEE>
<NAME OF ORGANIZATION>

Attended the *Stormwater Employee Training for
Recognizing and Reporting Illicit Discharges*
<Training Workshop Date and Time>

Municipality's Logo

<Instructor's Name>
<Municipality's Name>

