

## **STORM DRAINS "DOWN THE DRAIN"**

*SEQUENCE: For a better understanding of concepts, students should first have done "Eco Challenge"*

### **QUESTION**

How do wastes from your neighborhood end up on the beach?

### **UNDERLYING CONCEPT**

We are all part of the biosphere. The wastes that we produce directly enter the ocean ecosystem through the storm drain system or indirectly via the sewage system. We need to be aware and responsible for what goes down the drain.

### **SKILLS**

- Deciphering
- Plotting
- Mapping

### **OBJECTIVES**

Students will be able to:

- Mark storm drains to help raise awareness of the debris problem
- Conceptualize a system whereby pollutants enter the environment

### **TIME NEEDED**

- Two 55 minute class periods

### **MATERIALS NEEDED**

- Paint
- Stencils
- Copy of map of the immediate area surrounding the school (preferably enlarged)
- Colored pens or markers
- Information door hangers
- 8 minute video "Make the Connection: An Educational Tour of Los Angeles" to order, please contact City of Los Angeles, Storm Water Management Division 231-847-6350

### **VOCABULARY**

**Catch basins:** red curb areas with openings under them for water to flow into

**Storm drains:** system of catch basins and tunnels which are underneath the city and allow the water to flow off of the streets and into the drains and down into the ocean

**Source:** where something comes from

**Non-point source pollution:** pollution that enters the ocean from many sources (cars, farmlands, trash, etc.) and not from a single source such as a sewage outfall.

## **BACKGROUND INFORMATION**

Many coastal cities have a drainage system built into their infrastructure to handle excess run-off from rain and storms.

Everything that enters a storm drain ultimately ends up at the beach. Trash, leaf litter, oil from cars, and many other types of debris flow through the storm drains.

One of the biggest problems occurs when it rains, especially the first rain of the season. All of the trash, oil, etc. that has built up on the roads and in the catch basins (red curbed areas with openings) where the storm drains are visible on the street) is "flushed" down the storm drains to the beach. Marine wildlife can become entangled in the debris, they can also harm themselves by eating it. In addition, oils and other pollutants literally pollute the ocean environment. This includes bacteria and viruses that cause health problems for humans.

We need to be aware that what goes down the drain comes out in the sea.

### ***PRIOR TO THE ACTIVITIES***

Two to three weeks prior to the activity, contact the agency in your area that is in charge of marking storm drains. In the Los Angeles area contact "Heal the Bay." Contact your local city officials to find the agency in your area (they will handle all of the paperwork involved in being able to mark on the storm drains).

### ***DAY ONE:***

#### **ACTIVITY:**

#### ***"Mapping the Storm Drains"***

##### **"Into"**

1. What happens to the animals at the beach and in the ocean when there is trash? (*issues of 6-pack rings, plastic that is eaten, pollution from chemicals*)
2. How does trash get from the neighborhood to the ocean?  
(*through the underground storm drain system*)
3. What is the hole under the sidewalk with the red paint on the curb called?  
(*catch basins*)
4. What can we do to the catch basins to let people know that what goes into them ends up in the ocean?  
(*By putting special signs/marks on them*).

Let's take a walk around the school block and find the catch basins and storm drains so we can paint them and put signs on them.

#### **Activity:**

1. Students and teacher (and assistants) walk around the block or two surrounding their school. Using either local street maps or student generated maps note where the storm drains are--- either write down the location such as: "in the middle of the 1100 block of Harvard Ave."

and then mark it on the map when they return to the classroom---Or find the exact location and mark it on the street map guide while they are on the walk.

2. Write down and note which storm drains are unmarked and which need to be re-painted.
3. These maps will be used during the next day's activity.

**Extension:**

1. In Los Angeles the water in storm drains could flow into the LA River or could flow to Biona Creek. Contact Heal the Bay or your local water resource agency to determine exactly which path is taken by your local storm drains.
2. How is the impact different if it goes through the LA River or to the Biona Creek? (*In Los Angeles, the LA River goes directly into the ocean, while the Biona Creek passes through a large wetland area and can have other impacts besides the direct beach environment. There are other animals and plants that live in the wetlands that are a little different from those that live just on the beach.*)

**DAY TWO:**

**ACTIVITY:**

***“Down the Drain”***

**Activity**

1. This activity works best by dividing the class into groups of 2 or 3. You will need an assistant for the other group(s). If that is not realistic, one group can remain in the classroom/library doing internet research on the impact of trash and pollution on marine life. During this time, the other students stencil one or two of the storm drains.
2. Using the maps, take students out to the storm drains that are in easy walking distance of your school.
3. Note and record any trash seen around the catch basin.
4. Following the instructions on the stencil kit, stencil the storm drains.
5. Under Teacher's supervision (or an adult) students may hang the information provided by your local agency (or students can create information signs as part of their activity) signs on the door knobs of the nearby residents.
6. Graph any data or record in a science journal.

**Discussion:**

1. How should people clean their sidewalks? (*sweep away from the catch basin and throw the waste into the trash*)
2. What should people do with the oil from their cars when they change their own oil? (*take it to a recycling station or garage that is equipped to handle it for them*)
3. What should people do about their dog's waste? (*put it in the trash or it will eventually washout into the ocean*)
4. What can we do to be sure that people know about the storm drain problem? (*put up more signs, talk to our friends, families, and neighbors, place posters at local stores*)

**Extensions**

1. Students can make flyers to educate the neighborhood and pass out to neighbors and post at local stores.
2. Students can keep track of the storm drains they marked and periodically check for debris build up--and keep them clean.
3. Contact your local agency that maintains the sewers. Often someone will come to your school and discuss the difference between sewers and storm drains; possibly including opening a manhole cover on the street to illustrate the difference in routes between storm drains and sewers.