Facility Operator's Program Manual

for Hydrocarbon Spill Clean-Up

FACILITY CONTACT INFORMATION

GENERAL MANAGER:

ASSISTANT GENERAL MANAGER:

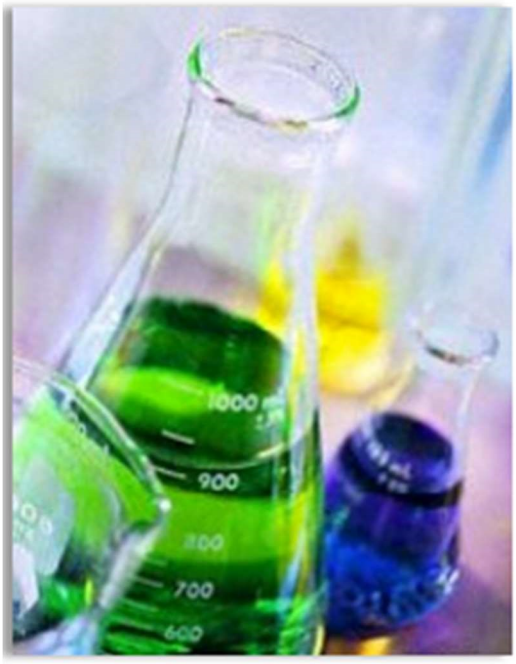
AREA SAFETY MANAGER:

REGIONAL MANAGER:

PROGRAM DESCRIPTION

The Facility Operator has adopted a program for responding to hydrocarbon spills. The FM 186-2 Program uses proprietary chemistry that solubilizes and micro-emulsifies hydrocarbon, thereby suppressing VOC release and removing residual contamination left behind with the kitty litter/hazardous waste drum method.

Under both Federal and State regulations, during an immediate response to a spill, there is an exemption from the requirement to obtain a treatment, storage, or disposal permit.* The resulting waste must then be properly characterized. When the FM 186-2 Program is properly applied to small hydrocarbon spills, the resulting waste is rendered non-flammable



and non-hazardous according to State and Federal Regulations.** In addition, the hydrocarbon becomes bioavailable for enhanced biodegradation. Federal and State regulations require generators to determine their waste. Prior knowledge can be applied to the process used to clean up identifiable waste streams. ECS supplies demonstrated application and clean up techniques that the facility operator applies as part of our process knowledge package. Nothing herein is to be taken as approval that all spilled products would be rendered nonhazardous. Ultimately it is up to the responder to determine the resulting clean up material and to dispose of it correctly. On large, difficult to contain hydrocarbon spills, containing the spill is paramount. Use the provided sock booms. Once containment has been attained, for volatile fuels, spraying the FM 186-2 solution over the entire surface of the spill suppresses flammable vapors. After absorbing the spill as safely and rapidly as possible, final clean-up for residual contamination with the FM 186-2 solution should be conducted following the "Small Spill Clean Up" procedure. Even though the FM 186-2 solution has been used in these spills, the collected absorbents are treated as hazardous waste and must be characterized properly.

* Federal 40CFR 264.1(g)(8)(i)(C), 40CFR 270.1(C)(3) and California State 22CCR 66264.l(g)(8)(A)(3), 22CCR 66270.1(C)(3)

** Petroleum waste is a presumptive hazardous waste and the users/generators are responsible for proper waste characterization and disposal. Federal and state regulations require generators to determine their waste classification(s). Regulations also allow for prior knowledge of the waste and treatment procedures in determining the waste's classification. The FM 186 program is a treatment procedure that can be applied as part of the prior knowledge package. Nothing herein is to be taken as approvals that. Fill spill materials would be rendered non-hazardous. Ultimately it is up to the generator to determine the resulting clean up material and to dispose of it correctly.

SMALL SPILL CLEAN UP PROTOCOL

A small spill is a spill that is easily contained and does not require use of sock booms.
Always follow the procedures carefully.

1.0 ALWAYS UTILIZE PERSONAL PROTECTIVE EQUIPMENT (PPE)

Safety Vest Goggles Gloves
FM 186-2 Sprayer Pads Broom

A - Assess the spill and cone off the area.
B – Be safe- personal and public safety.
C - Cleanup properly- follow your company guidelines carefully.
D - Determine waste and dispose of it correctly.

2.0 SPILL CLEAN UP

2.1 Spray the FM 186-2 completely around the spill

2.2 Cover the entire the spill area with the FM 186-2. Use a 1 to 1 ratio (one-part FM 186-2 to one-part spilled fuel).

2.3 Working from the outside edges first, mix the chemistries by pushing and pulling the solution within the impacted area towards the center of the spill.

2.4 As you mix the FM 186-2 with the spill, you will notice there is a bubbling action that starts to take place. In warmer weather this action may happen relatively quickly and in cooler weather it may be somewhat delayed.

2.5 As you start to mix the chemistries, the first reaction will turn the solution a milky white. Shortly thereafter the "bubbling" becomes quite pronounced.

2.6 Continue mixing until bubbling stops. If there is still bubbling going on, your mixture is incomplete. Remember, the larger the spill, the longer it will take to properly mix in the FM 186-2 chemistry.

2.7 When the bubbling action has stopped, you have successfully completed the reaction. Wait a couple of minutes to assure that the reaction is complete. It is now ready to be absorbed up.

2.8 Lay the absorbent pads in such a manner as to cover the ENTIRE SURFACE of the spilled fuel and allow the pads to sorb up the mixture.

2.9 After a couple of seconds use the brush to move the pads around to assist in this process.

2.10 Leave cones in place until all moisture has evaporated.

2.11 Remember to replace any products used from your spill kit immediately.

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CLEANING UP SMALL SPILLS
ALWAYS WEAR PPE

A small spill is one that is easy to contain. Remember to always wear your personal protective equipment (PPE). Place one of your vests in the red bag containing your PPE so it will be there when you need to respond to a large spill.
(See Protocol 1.0 and 1.1)

Circle the spill with FM 186-2 solution. Then spray over the entire spill area. Use a 1:1 ratio or, as much FM 186-2 solution as spilled fuel.
(See Protocol 2.1 and 2.2)

Begin brushing the spill and FM 186-2 solution into the center of the spill area
(See Protocol 2.3)

Hot Tip: Improve your curb appeal by frequently responding to the small drips that occur daily. Use the methods described.

SMALL SPILLS - Continued

As you mix the FM 186-2 into a spill, you will notice a bubbling action taking place. Continue mixing until the bubbling stops. In warmer weather, this action happens rapidly. In cooler weather, it will happen more slowly. If bubbling action is still happening, the mixing is incomplete - so continue to mix vigorously. REMEMBER: The larger the spill, the longer it will take to properly combine the spilled fuel and the FM 186-2. (See Protocol 2.4 - 2.7)

Lay sorbent pads over the entire spill area and let the pads soak up the mixture. Move the pads around with the broom to assist in this process. (See Protocol 2.8 and 2.9)

Use enough sorbent pads so that none of them are soaked through and dripping. Dispose of the used pads properly. (See Protocol 2.10 - 2.11)

Emergency Spill Response - Rock and Dirt

The addition of FM 186-2 enhances remediation of the contamination. As with spill procedures, the mixing of the FM 186-2 with the hydrocarbon is important. In addition, turning of the surface by mechanical action increases the oxygen level within the substrate. This enhances natural bacterial growth which is the key to the biodegradation of the contamination. The following procedure should be followed for maximum results.

Assess the extent of the contamination.

This involves assessing both the amount of hydrocarbon and the total area that the hydrocarbon reached.

1. Scar up the area to increase effectiveness.

2. Apply FM 186-2 solution to cover the entire stain in the soil. Apply this evenly over the contaminated area.

3. Mix well with steel rake and reapply FM 186-2 if necessary.

4. Apply a small amount of fertilizer with a number that has a higher nitrogen count than the phosphorous and potassium (NPK). The ratio should be a 10-5-5 or 20-10-10. Sprinkle over the treated area. Do not add too much fertilizer. You do not want to grow weeds. (Note: Be sure that the fertilizer does not contain any additional component that inhibits bacterial growth or contains a weed killer).

5. Keep the soil moist but do not over water. Too much water will slow the remediation process. Add water once a week if it does not rain.

MARK and MONITOR

6. After 30 days, sample the area and evaluate progress. This can be accomplished by noting the absence or presence of hydrocarbon odor. Some discoloration is natural.

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FM 186-2 SHOULD ONLY BE USED IN COMPLIANCE WITH ALL STATE AND LOCAL RULES AND REGULATIONS

Emergency Spill Response
Asphalt and Concrete Large Spills Over One Gallon

A large spill requires a phone call to your Area Equipment and Safety Manager

1. Locate the source and stop the spill. The contaminated area should be cordoned off and customers and others kept out. If volatile fuel is spilled, to reduce the danger of fire, suppress the vapors by spraying FM 186-2 solution over entire spill area. Containment of spills is a critical first step, for safety and in order to protect the environment.

2. Health and safety are primary concerns as a large spill is handled. The use of FM 186-2 to reduce the level of volatile hydrocarbon is also an important step. Even though a complete reaction may not take place, the volatile levels will be significantly reduced during an event.

3. Sock booms have been provided to protect storm drains and stop the forward migration of the spill. It is imperative that the storm water system be protected from any spilled hydrocarbon. If the spill looks like it may enter the storm drain, surround storm drains with the white oleophilic sock booms.

4. After protection has been provided for the storm drain system, assess the extent of the spill. If necessary, absorb raw hydrocarbon in white oleophilic pads. These will be placed in orange plastic waste bags.

5. After the spilled material has been removed, spray the FM 186-2 solution on the residual oils left on the ground and brush it in thoroughly.

6. Pick up solution with provided pads (gray or white)

7. Place all material into the orange bag, seal and label it as: Hydrocarbon Hazardous Waste. Pick up and disposal should proceed according to company guidelines.

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HOW TO HANDLE LARGE SPILLS SAFELY
ALWAYS WEAR PPE

When a large spill occurs - Press the system shutoff switch (if necessary) to shut down the station and begin to contain the spill.

Collect the ECS spill kit, proceed to the spill area and begin to contain the spill.

Place sock booms to protect the storm drain or edge of the property.

Large Spills - Continued

After the spill has been contained, overspray the spill area with the FM 186-2 solution. This overspray greatly reduces the danger of fire and explosion.

Clean up the used sorbent pads and sock booms by collecting them in the orange disposal bags provided in the ECS spill kit. Seal the bags and label them: HYDROCARBON - HAZARDOUS WASTE. Pick up and disposal should proceed according to your company guidelines. Following the cleanup of a large spill, remember to replenish your supply of FM 186-2 and absorbents.

Hot Tip: Hold training spill drills on a regular basis using water. This is a good way to prepare for a large spill.

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Waste Analytical
And Review

The Process of Knowledge at the Operator's Facility

For establishing knowledge of the treated waste at the Storage Facility, five areas were identified for sampling and analysis. Since the vehicles are all parked in the same direction, it is assumed that the spilled material from the rear of the car is rear end oil and from the middle of the car, transmission fluid. However, spills from the front of the car could be any number of fluids including hydraulic brake fluid, transmission fluid, power steering oils, motor oils, differential fluid (same as rear end fluid in a front wheel drive) and possibly some small amounts of antifreeze. Antifreeze is not a fluid expected since most antifreeze is lost at the scene of the accident.

A total of five samples were processed. Since most of the spillage occurs from the front of the vehicle, three samples were drawn from the front area, one from the middle and one from the rear. The sample from the middle area was drawn from the soil/rock yard while the rest were obtained from the hard surface staging area.

All spills were treated with FM 186 by a BHT employee and were immediately placed in clean sealed glass containers and placed on ice. All samples were sent by chain of custody to a state certified laboratory with TCLP metals, STLC metals and Title 22 aquatic toxicity testing conducted. Since the fluids do not exhibit any form of flammable hazard or contain benzene, ignitability and TCLP benzene were not run.

All samples passed the TCLP and STLC metals and the Title 22 aquatic toxicity testing. The results are illustrated in the following tables.

The sample number designated the size of the spilled material while the location illustrates where from the vehicle the spill generated.

Sample# (size)	12x3"	Location: Rear	REGULATORY LIMIT
	TCPL Metals	STLC Metals	
Arsenic	ND	ND	5.0
Barium	2.88	3.05	100.0
Cadmium	ND	ND	1.0
Chromium	ND	0.364	5.0
Lead	0.126	3.47	5.0
Selenium	ND	0.139	1.0
Silver	ND	ND	5.0
Mercury	ND	ND	0.2

Aquatic Tox pass >750

All data is in parts per million

Sample# (size)	12x6"	Location: Front	REGULATORY LIMIT
	TCPL Metals	STLC Metals	
Arsenic	ND	ND	5.0
Barium	1.61	3.31	100.0
Cadmium	ND	ND	1.0
Chromium	ND	0.585	5.0
Lead	0.070	4.30	5.0
Selenium	ND	ND	1.0
Silver	ND	ND	5.0
Mercury	ND	ND	0 . 2

Aquatic Tox pass >750

All data is in parts per million

Sample#(size)	18x24"	Location: Front	REGULATORY LIMIT
	TCPL Metals	$TLC Metals	
Arsenic	ND	0.057	5.0
Barium	1.55	2.10	100.0
Cadmium	ND	ND	1.0
Chromium	ND	0.534	5.0
Lead	ND	2.21	5.0
Selenium	ND	0.417	1.0
Silver	ND	0.277	5.0
Mercury	ND	ND	0 . 2

Aquatic Tox pass >750

All data is in parts per million

Sample#(size)	24x24"	Location: Front	REGULATORY LIMIT
	TCPL Metals	STLC Metals	
Arsenic	ND	0.054	5.0
Barium	1.61	2.93	100.0
Cadmium	ND	ND	1.0
Chromium	ND	0.548	5.0
Lead	0.050	3.33	5.0
Selenium	ND	0.412	1.0
Silver	ND	ND	5.0
Mercury	ND	ND	0.2
AquaticTox	pass>750		

All data is in parts per million

Sample# (size)	S-1 24x18"	Location: Middle (soil)	
	TCPL Metals	STLC Metals	REGULATORY LIMIT
Arsenic	ND	0.071	5.0
Barium	1.47	3.11	100.0
Cadmium	ND	ND	1.0
Chromium	ND	0.195	5.0
Lead	ND	0.185	5.0
Selenium	ND	0.206	1.0
Silver	ND	0.083	5.0
Mercury	ND	ND	0.2
AquaticTox	pass >750		

All data is in parts per million

Field analytical data was collected under standard protocol, transported in industry recognized containers, and was kept on ice or chilled.

Spills were immediately treated and preserved. Code of behavior included split sampling to verify protocol or were in response to a spill of opportunity. Material was submitted to California State certified laboratories for waste determination.

This and other data is used to help determine and quantify generator knowledge.

Project Description: **250 mls. (1 cup) of regular unleaded gasoline was spilled and cleaned up.**

FULL EXTRACTION

LR #	Order #	Client Smpl. ID	S Date	Method	Analyte	Result	DLR	Units
122689	490130	S-1, S-2 composite	01/12/2004	1030	Ignitability of Solids	Pass		P/F
122689	490130	S-1, S-2 composite	01/12/2004	1311/8260	Benzene TCLP	ND	12500	ug/L
122689	490130	Laboratory Blank		1311/8260	Benzene TCLP	ND	0.005	ug/L
	490130	S-1, S-2 composite	1/12/2004	Title 22	Aquatic Toxicity	Pass	>750	mg/L

Project ID: Elsinore Old: Chevron Indicates FM formula over 1 year old

Project Description: 500 mls. (2 cups) of regular unleaded gasoline was spilled and cleaned up.

LR #	Order #	Client Smpl. ID	S Date	Method	Analyte	Result	DLR	Units
111750	436669	Elsinore Old	06/05/2003	1030	Ignitability of Solids	Pass		P/F
111750	436669	Elsinore Old	06/05/2003	1311/8260	Benzene TCLP	0.123	0.05	mg/L
111750	436670	Laboratory Method Blank		1311/8260	Benzene TCLP	ND	0.005	mg/L
	03-373	Elsinore Pad Old	6/5/2003	Title 22	Aquatic Toxicity	Pass	>750	mg/L

Project ID: **Vons / Safeway**

Project Description: Spilled 250 mg (1 cup) regular unleaded gasoline and was cleanup up

At regulatory request, ran complete spectrum of 8260 (extraction)

LR #	Order #	Client Smpl. ID	S Date	Method	Analyte	Result	DLR	Units
112719	441169	V/S 1818X-2	06/23/2003	1311/8260	1,1 Dichloroethylene T	ND	0.005	mg/L
112719	441169	V/S 1818X-2	06/23/2003	1311/8260	1,2 Dichloroethane TC	ND	0.005	mg/L
112719	441169	V/S 1818X-2	06/23/2003	1311/8260	Benzene TCLP	0.033	0.005	mg/L
112719	441169	V/S 1818X-2	06/23/2003	1311/8260	Carbon Tetrachloride	ND	0.005	mg/L
112719	441169	V/S 1818X-2	06/23/2003	1311/8260	Chlorobenzene TCLP	ND	0.005	mg/L
112719	441169	V/S 1818X-2	06/23/2003	1311/8260	Chloroform TCLP	ND	0.005	mg/L
112719	441169	V/S 1818X-2	06/23/2003	1311/8260	Methylethylketone TC	ND	0.10	mg/L
112719	441169	V/S 1818X-2	06/23/2003	1311/8260	Tetrachloroethylene T	ND	0.005	mg/L
112719	441169	V/S 1818X-2	06/23/2003	1311/8260	Trichloroethylene TCl	ND	0.005	mg/L
112719	441169	V/S 1818X-2	06/23/2003	1311/8260	Vinyl Chloride TCLP	ND	0.005	mg/L
112719	441170	V/S 1818X-3	06/23/2003	1030	Ignitability of Solids	Passes		P/F
112719	441171	Laboratory Method Blank		1311/8260	1,1 Dichloroethylene T	ND	0.005	mg/L
112719	441171	Laboratory Method Blank		1311/8260	1,2 Dichloroethane TC	ND	0.005	mg/L
112719	441171	Laboratory Method Blank		1311/8260	Benzene TCLP	ND	0.005	mg/L
112719	441171	Laboratory Method Blank		1311/8260	Carbon Tetrachloride	ND	0.005	mg/L
112719	441171	Laboratory Method Blank		1311/8260	Chlorobenzene TCLP	ND	0.005	mg/L
112719	441171	Laboratory Method Blank		1311/8260	Chloroform TCLP	ND	0.005	mg/L
112719	441171	Laboratory Method Blank		1311/8260	Methylethylketone TC	ND	0.10	mg/L
112719	441171	Laboratory Method Blank		1311/8260	Tetrachloroethylene T	ND	0.005	mg/L
112719	441171	Laboratory Method Blank		1311/8260	Trichloroethylene TCl	ND	0.005	mg/L
112719	441171	Laboratory Method Blank		1311/8260	Vinyl Chloride TCLP	ND	0.005	mg/L
03-389	30-389	VS/1818X-1	6/23/2003	Title 22	Aquatic Toxicity	Passes	> 750	mg/L

Project Description: **500 mls (2 cups) of regular unleaded gasoline spilled, cleanup by Chevron personnel**

LR #	Order #	Client Smpl. ID	S Date	Method	Analyte	Result	DLR	Units
111729	436623	P-1	06/03/2003	1030	Ignitability of Solids	Passes		P/F
111729	436623	P-1	06/03/2003	1311/8260	Benzene TCLP	0.394	0.05	mg/L
111729	436623	P-1	06/03/2003	600/4-85/013	Fish Bioassay	Passes	>750	mg/L
111729	436624	Laboratory Method Blank		1311/8260	Benzene TCLP	ND	0.005	mg/L

Project Description: **During fillup undetermined amount of regular unleaded gasoline spilled (overfill)**

LR #	Order #	Client Smpl. ID	S Date	Method	Analyte	Result	DLR	Units
114859	452199	Gas pad 432	06/03/2003	1030	Ignitability of Solids	Passes		P/F
114859	452199	Gas Pad 432	06/03/2003	1311/8021	Benzene TCLP	ND	0.2	mg/L
114859	452199	Gas Pad 432	06/03/2003	600/4-85/013	Fish Bioassay	Pass	> 500	mg/L
114859	452199	Laboratory Method Blank		1311/8021	Benzene TCLP	ND	0.01	mg/L

Project Description: **500 mls. (2 cups) of regular unleaded gasoline was spilled and cleaned up.**

LR #	Order #	Client Smpl. ID	S Date	Method	Analyte	Result	DLR	Units
111751	436671	Elsinore Pad New	06/05/2003	1030	Ignitability of Solids	Pass		P/F
111751	436671	Elsinore Pad New	06/05/2003	1311/8260	Benzene TCLP	0.188	0.05	mg/L
111751	436672	Laboratory Method Blank		1311/8260	Benzene TCLP	ND	0.005	mg/L
	03-374	Elsinore Pad New	6/5/2003	Title 22	Aquatic Toxicity	Pass	>750	mg/L

ENVIROMENTAL CHEMICAL SOLUTION
ORDER GUIDE

ST 10108
Starter Kit

SK 1 007
Emergency Spill Kit

SP10&t
Two Gallon Spray

FM 1862-05
5 6.a.llo n

BRCJ01

FM 1862--5.5
.S.S Gallo n

AB184-EA

GL100. Box of Nitrile Gloves

Universal Sorbent Pads