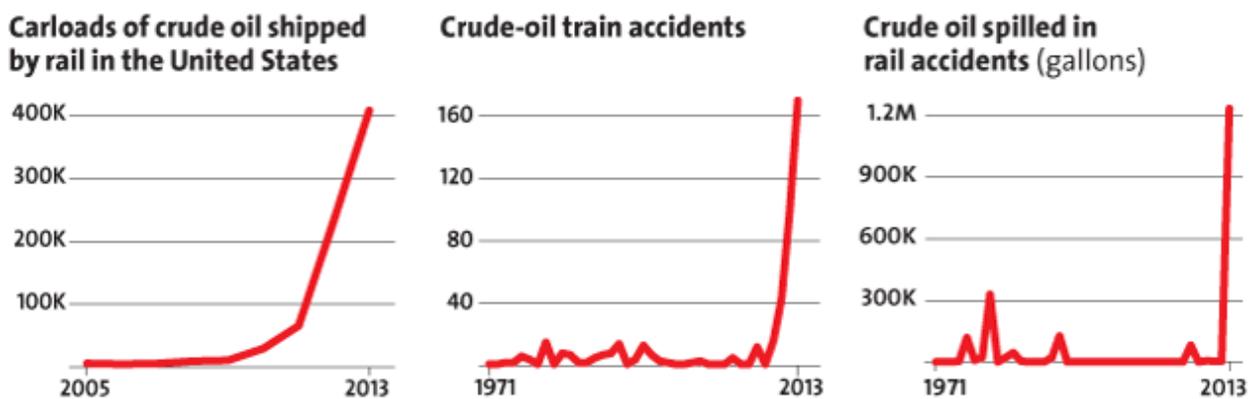


## Crude by Rail

### The Issue

There has been an increase in the number of train car derailments in the United States and Canada carry petroleum crude. Shipping hazardous materials is inherently dangerous. Transporting petroleum crude oil can be problematic if the crude oil is released into the environment because of its flammability. This risk of ignition is compounded in the context of rail transportation because petroleum crude oil is commonly shipped in unit trains that may consist of over 100 loaded tank cars. With the rising demand for rail carriage of petroleum crude oil throughout the United States, the risk of rail incidents increases along with the increase in the volume of crude oil shipped.



Sources: Association of American Railroads, Pipeline and Hazardous Materials Safety Administration

Mother Jones

North Dakota Sweet or Bakken Crude is highly volatile compared to other petroleum crude. The Bakken crude has a high number of light ends (propane, butane, and pentane) that vaporizes at lower temperatures than higher ends. The lighter ends in the Bakken Crude increases the flammability of this petroleum crude. The light ends could be removed at the source or at facilities close to the source before it is shipped by rail. If this occurred, there would be a less chance of the Bakken Crude to catch on fire if there is a derailment.

There have been several significant derailments in the U.S. and Canada over the last year causing deaths and property and environmental damage that involved petroleum crude oil shipments. Four of these accidents are described below.

## Lynchburg, VA

On April 30, 2014, an eastbound CSX Transportation, Inc. (CSX) unit train consisting of 105 tank cars loaded with petroleum crude oil derailed in Lynchburg, Virginia. Seventeen of the train's cars derailed, and one of the tank cars was breached. A petroleum crude oil fire ensued, and emergency responders evacuated approximately 350 individuals from the immediate area. Three of the derailed tank cars containing petroleum crude oil came to rest in the adjacent James River, spilling up to 30,000 gallons of petroleum crude oil into the river.



## Casselton, North Dakota

On December 30, 2013, 13 cars in a westbound BNSF Railway (BNSF) grain train derailed near Casselton, North Dakota/ fouling an adjacent main track. At the same time, an eastbound BNSF petroleum crude oil unit train with 106 cars was operating on that adjacent main track. The petroleum crude oil unit train reduced its speed but collided with the derailed car that was fouling the main track, resulting in the derailment of the lead locomotives and the first 21 cars of the petroleum crude oil unit train. Eighteen of the 21 derailed tank cars ruptured, and an estimated 400,000 gallons of petroleum crude oil was released. The ruptured tank cars ignited, causing a significant fire. Approximately 1,400 people were evacuated. Damages from the derailment have been estimated at \$8 million.



## Aliceville, Alabama

On November 8, 2013, a 90-car petroleum crude oil train operated by Alabama & Gulf Coast Railway derailed in a rural area near Aliceville, Alabama. The petroleum crude oil shipment originated in North Dakota, and was bound for Walnut Hill, Florida, to be transported by a regional pipeline to a refinery in Saraland, Alabama. Twenty-six cars derailed, resulting in eleven cars impinged by a crude oil pool fire. An undetermined amount of petroleum crude oil escaped from derailed cars and found its way into wetlands area nearby the derailment site. Clean up costs are estimated at \$3.9 million.



## Lac-Mégantic, Quebec

On July 6, 2013, a catastrophic railroad accident involving a U.S. railroad company occurred in Lac-Mégantic, Quebec, Canada, when an unattended freight train transporting petroleum crude oil rolled down a descending grade and subsequently derailed. The subsequent fires, along with other effects of the accident, resulted in the confirmed deaths of 47 individuals. In addition, derailment caused extensive damage to the town center, a release of hazardous materials that will require substantial clean-up costs, and the evacuation of approximately 2,000 people from the surrounding area.



### State Oversight

The California Public Utilities Commission (CPUC) is the State agency charged with ensuring the safety of freight railroads, inter-city and commuter railroads, and highway-railroad crossings in the State of California. CPUC performs these railroad safety responsibilities through the Railroad Operations and Safety Branch (ROSB) of the Safety & Enforcement Division.

ROSB's mission is to ensure that California communities and railroad employees are protected from unsafe practices on freight and passenger railroads by enforcing rail safety rules, regulations, and inspection efforts; and by carrying out proactive

assessments of potential risks before they create dangerous conditions. ROSB personnel investigate rail accidents and safety related complaints, and recommend safety improvements to the Commission, railroads, and the federal government as appropriate.

ROSB inspections are divided into five railroad disciplines:

**Operating Practices** – oversight of main, branch and yard train operations, including hours of service, carrier operating rules, employee qualification guidelines, and carrier training and testing programs to determine compliance with railroad occupational safety and health standards, accident and personal injury reporting requirements, and other requirements

**Track** – oversight of track construction, maintenance and inspection activities

**Signal & Train Control** – oversight of signal system construction, maintenance and inspection activities

**Motive Power & Equipment** – oversight of locomotives, freight and passenger rail cars, air brakes, and other safety appliances maintenance and inspection activities

**Hazardous Materials** – oversight of the rail movements of hazardous materials, such as petroleum and chemical products; and inspection of hazardous materials shippers

The Federal Rail Safety Act of 1970, the primary federal statute regulating freight rail safety, provides states with an exemption to the generally preemptive federal regulatory scheme of the federal railroad safety laws: A State may adopt or continue enforce an additional or more stringent law, regulation, or order related to railroad safety or security when the law, regulation, or order —

- (1) Is necessary to eliminate or reduce an essentially local safety or security hazard;
- (2) Is not incompatible with a law, regulation, or order of the United States Government; and
- (3) Does not unreasonably burden interstate commerce. (49 U.S.C. Section 20106)

### **DOT/Federal Rail Authority**

The Federal Rail Authority (FRA), which resides in the Department of Transportation (DOT), has the responsibility for regulating the shipment of petroleum crude by rail. This includes the design of the train cars carrying the crude, the speeds that the trains can travel, how the petroleum is packaged, and the safety of the rails that the petroleum crude is transported over. The FRA has established some voluntary requirements such as the speed that trains carry the crude may travel and redirecting the traffic of the shipments around high hazard locations. The requirement that the train cars carrying the Bakken crude meets a safer design can be done under FRA regulations.

Regulations are being drafted to address this issue. Any new train cars are being built under the safer design that is being considered for all train cars carrying Bakken crude.

### Upgraded DOT-111 Railcar

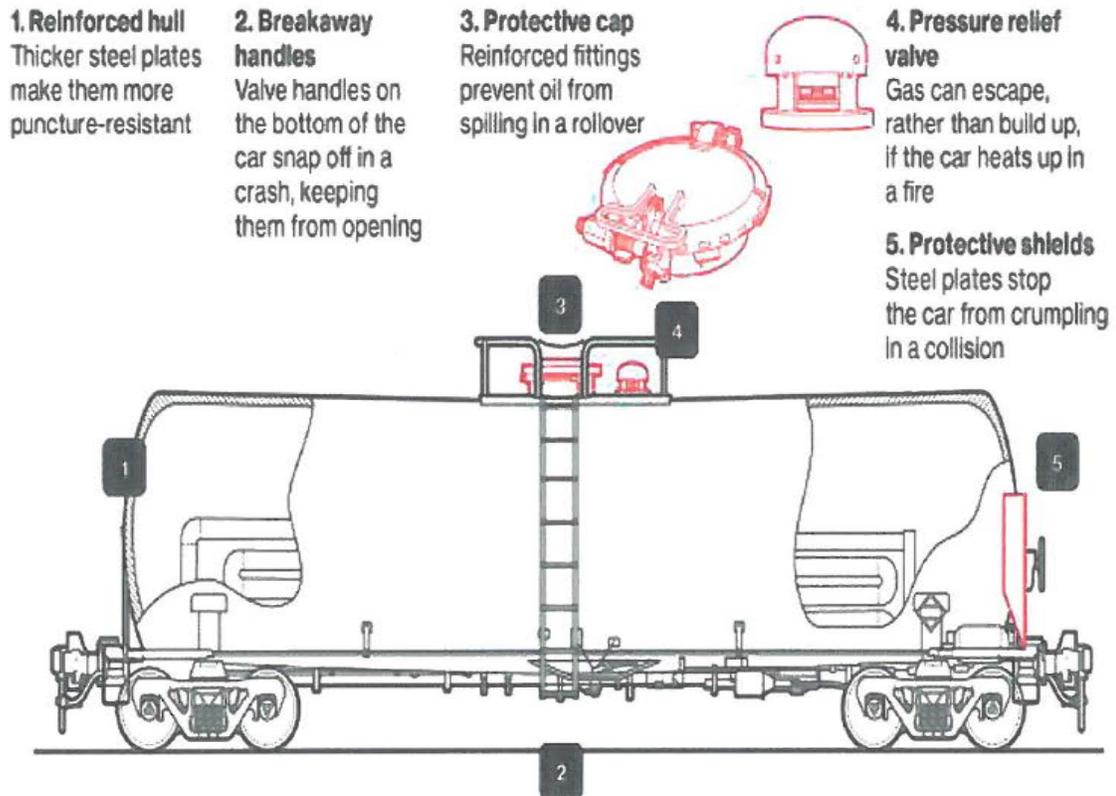


ILLUSTRATION BY CHRIS PHILPOT; GRAPHIC BY BLOOMBERG BUSINESSWEEK

DOT on May 7 issued emergency order requiring that each railroad carrier provide the State Emergency Response Commission (SERC) for each state in which it operates trains transporting 1,000,000 gallons or more of Bakken crude oil, notification regarding the expected movement of such trains through the counties in the state. The notification shall identify each county or a particular state or commonwealth's equivalent jurisdiction (e.g., Louisiana parishes, Alaska boroughs, Virginia independent cities) (county), in the state through which the trains will operate. The California Office of Emergency Services (Cal/OES) is the contact for the SERC in California. Cal/OES is establishing a means to distribute the information required under this emergency order to the appropriate agencies for each of the Counties within California.

The information that is to be submitted to the SERC must contain the following: (a) provide a reasonable estimate of the number of trains implicated by this Order that are expected to travel, per week, through each county within the state; (b) identify and describe the petroleum crude oil expected to be transported in accordance with 49 CFR

part 172, subpart C; (c) provide all applicable emergency response information required by 49 CFR part 172, subpart G; and, (d) identify the routes over which the material will be transported. This notification also must identify at least one point of contact at the railroad (including name, title, phone number and address) responsible for serving as the point of contact for SERCs and relevant emergency responders related to the railroad's transportation of Bakken crude oil.

On February 21, 2014, the Secretary of Transportation sent a letter to the President and Chief Executive Officer at the AAR requesting that he and his members subscribe to voluntary actions to improve the safe transportation of crude oil by rail. These include: speed restrictions, braking signal propagation systems, routing analyses, additional track and rail integrity inspections, more frequent mechanical inspections, development of an emergency response inventory, funding for emergency responder training, and continued communication with communities about the hazards of crude oil being transported by rail. To date, all Class I railroads have subscribed to the voluntary actions and several more have expressed their intent to sign.

DOT requires the railroads to develop the safest route from the origin of the shipment to the destination when transporting hazardous materials. Code of Federal Regulations, Title 49, Appendix D of part 172 "Rail Risk Analysis Factors" requires railroads to select the route of how hazardous materials are to be transported with the following factors to be considered in the performance of this safety and security risk analysis:

1. Volume of hazardous material transported;
2. Rail traffic density;
3. Trip length for route;
4. Presence and characteristics of railroad facilities;
5. Track type, class, and maintenance schedule;
6. Track grade and curvature;
7. Presence or absence of signals and train control systems along the route ("dark" versus signaled territory);
8. Presence or absence of wayside hazard detectors;
9. Number and types of grade crossings;
10. Single versus double track territory;
11. Frequency and location of track turnouts;
12. Proximity to iconic targets;
13. Environmentally sensitive or significant areas;
14. Population density along the route;
15. Venues along the route (stations, events, places of congregation);
16. Emergency response capability along the route;
17. Areas of high consequence along the route, including high consequence targets as defined in §172.820(c);
18. Presence of passenger traffic along route (shared track);
19. Speed of train operations;
20. Proximity to en-route storage or repair facilities;

21. Known threats, including any non-public threat scenarios provided by the Department of Homeland Security or the Department of Transportation for carrier use in the development of the route assessment;
22. Measures in place to address apparent safety and security risks;
23. Availability of practicable alternative routes;
24. Past incidents;
25. Overall times in transit;
26. Training and skill level of crews; and
27. Impact on rail network traffic and congestion.

DOT is developing regulations that would require a safer tank car be used from the existing DOT-111 that is now being used to transport Bakken crude. Some of the issues that should be required in the new regulations for these tankcars are shown in the figure below.

### **Response to a Train Derailment and Release of Petroleum Crude**

SB 1319 is a bill authored by Senator Pavley with co-authors Senators Lara and Wolk. The bill would direct the Governor to require the administrator for oil spill response appointed by the Governor to amend the California oil spill contingency plan to provide for the best achievable protection of all state waters, not solely coastal and marine waters, and to submit the plan to the Governor and the Legislature on or before January 1, 2017. The bill would require the regulations to provide for the best achievable protection of all waters and natural resources of the state.

The bill will require, if passed, that the oil spill contingency plan contain a regional and local planning element that shall provide the framework for the involvement of regional and local agencies in the state effort to respond to an oil spill, and shall ensure the effective and efficient use of regional and local resources, as appropriate, in all of the following:

- (1) Traffic and crowd control,
- (2) Firefighting,
- (3) Boating traffic control,
- (4) Radio and communications control and provision of access to equipment,
- (5) Identification and use of available local and regional equipment or other resources suitable for use in cleanup and removal actions,
- (6) Identification of private and volunteer resources or personnel with special or unique capabilities relating to oil spill cleanup and removal actions,
- (7) Provision of medical emergency services,
- (8) Identification, care, and evaluation of public health impacts, and

- (9) Consideration of the identification and use of private working craft and mariners, including commercial fishing vessels and licensed commercial fishing men and women, in containment, cleanup, and removal actions.

SB 1319 would keep an administrative fee on crude oil or petroleum product at \$0.065 per barrel for crude received at a marine terminal or at a refinery by pipeline or any other method of transport. This fee would be used to pay for emergency response planning, including the development of contingency plans for the local jurisdictions that oil may be shipped by rail and drills to test the contingency plans.

AB 380, if passed, would

If there are derailments of train cars carry Bakken crude in Contra Costa County, there are more resources available in the County to respond to a derailment than most areas of the state. These resources include foam, equipment and personnel that would be available from Petrochemical Mutual Aid Organization.

## Oil by Rail Safety in California Preliminary Findings and Recommendations



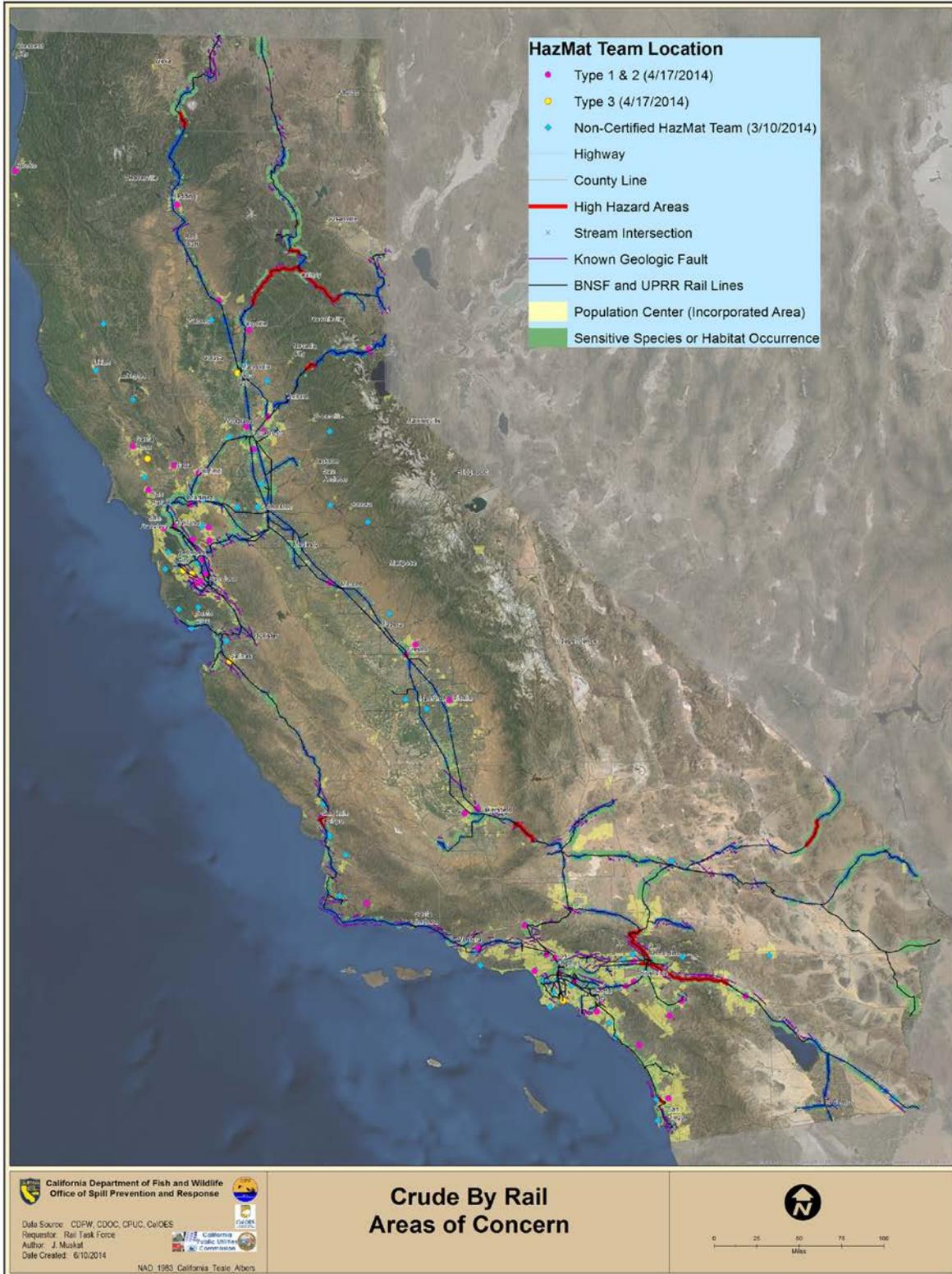
State of California Interagency Rail Safety Working Group  
June 10, 2014

The Governor established an interagency working group to research rail safety in California and report to him the findings of the workgroup. On June 10, the working

group issued preliminary findings in a twenty page report. Below are the recommendations from the working group:

1. Increase the Number of California Public Utilities Commission Rail Inspectors
2. Improve Emergency Preparedness and Response Programs
  - a. Expand the Oil Spill Prevention & Response Program to Cover Inland Oil Spills
  - b. Provide Additional Funding for Local Emergency Responders
  - c. Review & Update of Local, State and Federal Emergency Response Plans
  - d. Improve Emergency Response Capabilities
  - e. Request Improved Guidance from United States Fire Administration on Resources Needed to Respond to Oil by Rail Incidents
  - f. Increase Emergency Response Training
3. Request Improved Identifiers on Tank Placards for First Responders
4. Request Railroads to Provide Real-Time Shipment Information to Emergency Responders
5. Request Railroads Provide More Information to Affected Communities
6. Develop and Post Interactive Oil by Rail Map
7. Request DOT to Expedite Phase Out of Older, Riskier Tank Cars
8. Accelerate Implementation of New Accident Prevention Technology
  - a. Positive Train Control
  - b. Electronically-Controlled Pneumatic Brakes
9. Update California Public Utilities Commission Incident Reporting Requirements
10. Request Railroads Provide the State of California with Broader Accident and Injury Data
11. Ensure Compliance with Industry Voluntary Agreement
  - Increased Track Inspections
  - Braking Systems
  - Use of Rail Traffic Routing Technology
  - Lower Speeds
  - Increased Trackage Safety Technology
12. Ensure State Agencies Have Adequate Data

# California Railways



## **The County's and Richmond's Industrial Safety Ordinances**

The unloading of Bakken crude oil at the petroleum refineries from trucks, railcars, barges, and ships and storage of the Bakken crude would be covered under the County's and the City of Richmond's Industrial Safety Ordinances. The unloading of the crude would be required to meet all the requirements of the Industrial Safety Ordinances, including Inherently Safer Systems, Human Factors, Process Hazard Analysis, and the other prevention elements of the ordinance. If there are railcars being stored at the refineries with Bakken crude oil, the railcars would also be subject to the Industrial Safety Ordinances. When a material is in transportation it is not covered under the Industrial Safety Ordinances. Locations where crude oil is off loaded from train cars into storage tanks and then into either pipelines or trucks are not covered under the Industrial Safety Ordinances.

## **Contra Costa County's Response Crude Train Derailment**

Contra Costa County has more resources than most of the jurisdictions in California. These resources include the fire departments and districts in the County that have some familiarity with petroleum and petroleum products. The fire departments and districts have performed drills and exercises with the refineries on incidents that may occur at a petroleum refinery. Oil spill exercises on the bay or delta have been done in corporation with the refineries, Oil Spill Prevention and Response, the Coast Guard, and other response agencies. Petrochemical Mutual Aid Organization (PMAO) is an organization under the Contra Costa County CAER Group and is made up of the refineries, Dow, and emergency response agencies. PMAO has resources that are available, such as personnel, foam, and equipment that can be used in response to an oil spill or fire. Three hazardous materials response teams, including Contra Costa Health Services, Richmond Fire Department, and San Ramon Valley Fire Protection District.

## **Actions Contra Costa County Can Take**

What can we do to prepare for a crude oil train derailment?

- Support the passage of SB 1319 and AB 380;
- Training - Fire department and hazardous material response teams participate in training that is being provided for responding to crude train derailments;
- Support and encourage that DOT issue new regulations on upgrading the DOT-111 railcars, requiring that hazardous material shipments by rail are done using the safest routes, requiring that the light ends of crude oil be removed before shipping, and making public what hazardous materials are being shipped throughout the United States by County and track;
- Conduct drills with PMAO, OSPR, and other emergency response agencies; and
- Work with the different railroad companies to learn their emergency contacts and what resources are available to respond to a spill.