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## Chapter 1 : Solid waste policy in the United States - Wikipedia

*State and local issues in transportation of hazardous waste materials: towards a national strategy: proceedings of the National Conference on Hazardous Materials Transportation: St. Louis, Missouri, May , / sponsored by the Urban Transportation Division of the American Society of Civil Engineers in cooperation with the Transportation Research Board and U.S. Department of Transportation ; co-edited by Mark D. Abkowitz and Kostas G. Zografos.*

This chapter provides an overview of the procedures used to address hazardous materials, hazardous wastes, and contamination during the project planning and delivery process. A hazardous substance is a type of hazardous material specifically defined in California Health and Safety Code Section The definition of hazardous substance encompasses several federal environmental statutes that contain lists of hazardous substances. The definition is broad and far reaching and includes hazardous waste. Waste substances which can pose a substantial or potential hazard to human health or the environment when improperly managed. Hazardous waste possesses at least one of these four characteristics: Hazardous materials or wastes that have been released into soil, surface water, ground water, or air are contamination. Properties on which hazardous materials or wastes are currently handled, or were handled in the past, have the potential to be contaminated. Properties on which hazardous materials or wastes have been mismanaged are almost certain to be contaminated. The presence of contamination can dramatically affect the cost, scope, and schedule of a project and create permanent liability for the Department through property ownership and hazardous waste disposal. The necessary special handling, worker safety precautions, disposal of contaminated material, and regulatory agency oversight and approvals increase project costs and can adversely impact the project schedule. Contamination discovered during construction can greatly increase construction costs by temporarily stopping construction during excavation and disposal activities. As a result, contaminated properties shall be identified and avoided if at all possible. If avoidance is not possible, contamination must be carefully and thoroughly evaluated to identify and define its possible effect on the project and the potential future liability for the Department that it might create. The identification and evaluation processes described in this chapter are commonly used throughout the environmental consulting community and are consistent with regulatory requirements for characterizing properties and sites. Properties and sites that may be included in the transportation project are first screened for current or past activities that involve d hazardous materials or generate d hazardous wastes, or properties with known contamination. Each potentially contaminated property identified is further evaluated through the preparation of an Initial Site Assessment ISA utilizing non-invasive investigative methods. Properties identified in the ISA as having recognized environmental conditions or activity use limitations related to contamination, are further scrutinized through a Preliminary Site Investigation PSI that includes actual sampling of media such as soil and water. There are both federal and state components. Within the state there are several agencies and departments that may have overlapping jurisdiction over any given situation. This section provides an introduction to the laws, regulations, and the federal and state agencies and departments involved. Compliance costs associated with meeting federal and state mandated hazardous materials, hazardous waste, and contamination remediation requirements are eligible project costs so long as the appropriate processes and protocols, including their timing in the project development and delivery process, are adhered to. These sites are commonly referred to as Superfund Sites. The two most important federal laws that address environmental contamination and the management of hazardous waste are known as the: This law instituted a tax on the chemical and petroleum industries and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that might endanger public health or the environment. The NPL is the list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. Liability is of particular concern to the Department. Under CERCLA, a current or former property owner can be found responsible for remediation even if they did not contaminate

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the property. The remediation costs may make it impossible for a transportation project to proceed and the liability itself can make the Department vulnerable to future claims by adjacent property owners and others with access to the property. These issues need to be considered early and throughout the entire planning and project delivery process. RCRA defines certain wastes as hazardous under federal law RCRA wastes and also establishes a framework for the management of non-hazardous wastes. RCRA addresses only active and future facilities, not abandoned or historical sites. The up front and long-term costs associated with the generation of RCRA wastes must be considered when planning transportation projects. During the project development process there are special management, transportation, and disposal process, costs, and fees to consider. RCRA waste generation can also create significant future liability for the Department. RCRA stipulates that the generator of hazardous waste is responsible for that waste even after proper disposal in an appropriately permitted landfill. Thus, if the landfill operator goes bankrupt, the original waste generators must take responsibility for the long-term maintenance of that landfill. This permanent liability creates a huge incentive to minimize hazardous waste generation on projects and to avoid acquiring contaminated properties because remediation of contaminated properties usually results in generating hazardous wastes. The Clean Air Act protects the general public from exposure to airborne contaminants that are known to be hazardous to human health. The requirements of the CAA must be considered when cleaning up soil or ground water contamination. Compliance with the asbestos NESHAP regulations protects the public by minimizing the release of asbestos fibers during activities involving the processing, handling, and disposal of asbestos-containing material. This is important because asbestos can be found in building products that may be encountered during structure demolition or retrofit and because naturally occurring asbestos NOA exists in many areas of California. The statute employs a variety of regulatory and nonregulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. Direct discharges or "point source" discharges are from sources such as pipes and sewers. These departments and boards provide regulatory oversight of hazardous materials, hazardous substances, hazardous waste, contamination, and non-hazardous waste. A brief introduction to the laws and regulations enforced by these departments and boards follows. Hazardous Waste Control through 6. Laws governing underground storage tanks UST are also found within these sections. CARB is designated as the air pollution control agency for all purposes set forth in federal law. Water Code Division 7. Title 8 Division 1. Department of Industrial Relations, Chapter 3. This includes regulation of construction related activities to ensure worker and public health and safety. Regulations include exposure limits, equipment, protective clothing, and procedures required to prevent exposures to hazardous materials including hazardous waste and contamination. Specific sections cover lead in construction safety standards and asbestos exposure, as well as accident prevention measures. This regulation defines construction as any activity that disturbs soil or rock containing asbestos in concentrations of 0. Title 22 Social Security, Division 4. Environmental Health Standards for the Management of Hazardous Waste Title 22 defines hazardous and special waste, identifies federal and state hazardous waste criteria, and regulates the storage, transportation, and disposal of waste. Title 22 was created to regulate the hazardous wastes generated by factories or similar sources, but soil excavated during construction may also be regulated. If contaminated soil meets Title 22 waste criteria and will be excavated during construction, the soil must be handled in a manner consistent with these regulations. These regulations are also found in Title Title 23 Waters, Division 3. These regulations govern both placement of waste to land and USTs. The primary goal of these regulations is to protect surface and ground water. Regulation of the placement of waste to land can impact transportation projects because it controls the re-use and management of soil and water containing contaminants below hazardous waste thresholds. Transportation projects are also affected by these regulations when USTs will be removed as part of right of way clearance. Title 26 Toxics Title 26 is a compilation of all environmental and hazardous waste regulations issued by state regulatory agencies published in a single title of the California Administrative Code. These toxics regulations are also found in the original titles assigned to each agency. Title 26 is organized with the agencies listed in

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numerical sequence according to their original title assignments. The regulatory sections within each division of this title also reflect the original section number assignments and are arranged in numerical sequence. Title 27 Environmental Protection, Division 2. Solid Waste Title 27 contains a compilation of landfill regulations that govern the construction of landfills and restrict what wastes the different classes of landfills can accept. Wastes are divided into inert e. Each of these waste types must be disposed of at the class of landfill that is constructed to contain it. The regulations in Title 27 define what class of landfill can accept the material excavated from a project. Businesses that handle hazardous materials are inspected for compliance with regulations. A regulatory agency generally becomes actively involved with a property if there are, or have been, regulated activities at the site e. Site investigations performed for the project may also trigger regulatory oversight. Several regulatory agencies in California may have oversight on a particular site. At the local level these may include local cities, counties, and fire departments. These local entities perform inspections of regulated businesses and often order and oversee cleanup of minor releases of hazardous materials and hazardous wastes. In general, larger and more highly contaminated sites are more likely to be actively regulated than smaller sites with low levels of contamination. In some cases, however, small sites containing low concentrations of contamination may be regulated if the contamination at the site is considered part of a widespread regional ground water plume. Examples of contaminants found in regional ground water plumes in California include methyl tertiary butyl ether MTBE , solvents, and hexavalent chrome. Regulatory Agencies The following are federal, state, and local agencies that have regulatory authority over water quality, air quality, hazardous materials, hazardous waste, and contaminated sites.

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## Chapter 2 : Various Waste Disposal Problems and Some Fantastic Solutions - Conserve Energy Future

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Additionally, the proposed method of treatment, storage, or disposal is the practicable method currently available to the generator that minimizes the present and future threat to human health and the environment. Authorized States also may conduct inspections. In general, inspections may be conducted by either EPA or a State and may be done jointly or separately. Compliance Orders Whenever on the basis of any information the Administrator determines that any person has violated or is in violation of any requirement of Subtitle C of RCRA, the Administrator may issue an order assessing a civil penalty for any past or current violation, requiring compliance immediately or within a specified time period, or both. Also, the Administrator may commence a civil action in the district where the facility is located for appropriate relief, including a temporary or permanent injunction. Monitoring, Analysis and Testing Action If the Administrator determines, upon receipt of any information, that the presence of any hazardous waste at a facility or site or that the release of any such waste from a facility or site may present a substantial hazard to human health or the environment, the Administrator may issue an order requiring monitoring, testing, analysis, and reporting to determine the nature and extent of the hazard. Inventory of Federal Agency Hazardous Waste Facilities Federal agencies are required to compile, publish, and submit to EPA and authorized States an inventory of all facilities that they currently own or operate or have previously owned or operated at which hazardous waste is stored, treated, or disposed of, or was disposed of at any time. This inventory must be submitted every 2 years. This inventory includes a description of the location of each TSDF and the amount, nature, and toxicity of the hazardous waste at those sites. Information on the known extent of environmental contamination and the current status of the site also must be submitted. The section clarifies that Federal agents, employees, and officers are not personally liable for civil penalties arising from acts or omissions within the scope of their official duties; however, Federal employees are subject to criminal fines and imprisonment. Federal agencies cannot be held criminally liable. Recycling and Procurement Federal agencies must develop a procurement program to purchase recycled products to the maximum extent practicable and must recycle their wastes. Procurement programs, at a minimum, must include: In the case of paper products, the maximum use of postconsumer-recovered materials is required. Federal agencies must ensure that their contractors comply with RCRA. Imminent Hazard Upon receipt of any evidence that the past or present handling, storage, treatment, transportation or disposal of any solid waste or hazardous waste may present an imminent and substantial endangerment to health or the environment, the Administrator may bring suit on the behalf of the United States against any person who has contributed or is contributing to such handling, storage, treatment, transportation or disposal. The Administrator must provide notice to the affected State. The Administrator, after giving notice, may take other action necessary to protect public health and the environment, including issuing such orders as may be necessary. Inspections and Information Gathering for USTs This provision requires any owner or operator of an UST to provide information, upon request by a designated EPA or state employee, relating to such tanks and associated equipment. Section provides that EPA may issue compliance orders or initiate civil enforcement actions for noncompliance. EPA must first give notice to appropriate states for enforcement actions involving noncompliance with EPA-approved state regulations. Federal facilities may also be subject to penalty actions per tank for each day of violation. Subject violations include failure to comply with EPA or state tank notification requirements, release detection, prevention, and correction regulations, and various delivery prohibitions. Therefore, Federal facilities are subject to all administrative orders and all civil and administrative penalties and fines including reasonable service charges , regardless of whether such penalties or fines are punitive or coercive in nature or are imposed for isolated, intermittent, or continuing violations. The penalties that may be assessed against Federal facilities as of August are provided

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below. In addition, the EPA Administrator may suspend or revoke any permit issued to the violator whether issued by the Administrator or the State. Each day of violation constitutes a separate violation. In addition to the civil penalties listed above, EPA inspectors may issue field citations with penalties against Federal agencies for UST violations. Criminal Enforcement In addition to issuing and negotiating compliance orders and assessing civil penalties, sanctions may be sought against individual employees of Federal facilities for criminal violations of RCRA. Fines and penalties under RCRA for several types of criminal violations are specified below. The maximum punishment authorized by this section may be doubled with respect to both fine and imprisonment for a second conviction. The Administrator also may take other action including, but not limited to, issuing orders necessary to protect public health and the environment. Determining whether EPA or the State will take the enforcement lead in an authorized State depends on a number of factors, including whether the State is authorized to enforce the applicable provisions. Tribes may, to the extent of their authorities, administer and enforce these tribal law programs for federal facilities in their Indian country.

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## Chapter 3 : Retailers Pay Millions for Hazardous Waste Violations | Green Building Law Update

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Solid Waste Tree, Based on Resource Conservation and Recovery Act , United States Environmental Protection Agency Solid waste means any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or an air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. Solid waste does not include solid or dissolved materials in domestic sewage , solid or dissolved materials in irrigation return flows, or industrial discharges. Generally, the term "solid waste" refers to non-hazardous waste, though according to the Resource Conservation and Recovery Act RCRA and other state regulations, " hazardous waste " is also a part of solid waste. In , United States residents generated million tons of trash, down from million tons in In the same period, the per capita generation of MSW lowered to 4. This is generated during the production and distribution through decomposition of food, vegetables, or meat , removal of non-usable parts, removal of substandard products, and spoiling due to substandard packaging. Thus agricultural waste is generated at all stages of food system including farming , storage, processing , and wholesaling. The food scraps generated by retailers and consumers are not included in this category as these scraps enter the waste stream as municipal solid waste. They produce large amounts of waste in small areas. For example, EPA reports that a single dairy cow produces approximately pounds of wet manure per day equaling to that of people. The main problems of animal waste mismanagement are environmental, especially water pollution. EPA reported that each year United States industrial facilities generate and dispose of approximately 7. This can be often bulky and heavy building materials consisting of concrete, building wood waste, asphalt from roads and roof shingles , drywall gypsum , metals , bricks , blocks, glass , plastics , building components like doors, windows, and fixtures, and trees, stumps, earth, and rock from construction and clearing sites. Since this often consists of bulky and heavy materials, proper waste management can improve resources. Treatment[ edit ] Treatment waste consists of sludge, byproducts , coproducts, or metal scraps resulting from a facility or plant. Sludge is any solid, semisolid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant. This includes electric arc furnace dust and baghouse dusts. A byproduct is a material that is not a primary product which is not solely or separately produced in a production process whereas coproducts are intentionally produced. Byproducts need further processing to be useful whereas coproducts are highly processed and can be sold as a commodity without further processing. Examples of byproducts include slag , fly ash , heavy ends, distillation column bottoms, etc. Scrap metal wastes include sheet metal , wire, metal tanks and containers, scrap automobiles, and machine shop turnings that are generally nonhazardous in nature. According to the Medical Waste Tracking Act of , medical waste is: Special[ edit ] Six categories of waste were given deferral from hazardous waste requirements by EPA under proposed hazardous waste management regulations. This special category of wastes was maintained until further human health and environmental risk assessments could be completed. As per this deferral, the six categories of special waste are 1 Cement kiln dust, 2 Mining waste, 3 oil and gas drilling muds and oil production brines, 4 beneficiation and processing waste from phosphate rock mining, 5 uranium waste, and 6 utility or fossil fuel combustion waste. The difference between special wastes and other wastes is the large volume of generation of special waste at a time leading to less human and environmental risk. Hazardous waste can be liquids, solids, gases, or sludges and can be discarded household, industrial, or commercial products such as oil, paints , certain electronics waste, cleaning fluids or pesticides , or the by-products of manufacturing processes. This includes used and leftover household products that contain, corrosive, toxic, ignitable, or reactive constituents.

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Since these contain potentially hazardous ingredients, improper disposal can lead to human health risks and environmental pollution. Proper and safe management of hazardous wastes is important in the collection, reuse, recycling, and disposal stages which are mostly facilitated by the municipalities or local governments and specified by EPA in household hazardous waste regulations. The primary generators of hazardous wastes in any region are industrial facilities, manufacturing and processing units, workshops and maintenance units, nuclear facilities, chemical units, etc. The following section briefly describes the four main types of industrial hazardous wastes. This is waste mainly generated from industrial or manufacturing processes or other different industrial sectors, also called non-specific source wastes. This is generated from specific industrial sources such as petroleum refining, wood treatment, pesticide manufacturing, inorganic pigment of chemical manufacturing, metal and coke production, and veterinary pharmaceutical industries. These are discarded or intended to be discarded commercial chemical products that have listed generic names, container residues, spill residues, or off-specification species. P-list differs from U-waste where the former is acute hazardous waste and the latter toxic waste. This is a way to streamline them separately and control and facilitate proper collection, storage, recovery or treatment, and disposal that encourages reducing the quantity of such wastes going to landfills and incinerators and thereby increases recovery and recycling rates. These are wastes that are defined based on their specific characteristics of ignitability, corrosivity, reactivity, and toxicity. Ignitable wastes are defined by their combustion capacity under conditions when they consist of waste oils and solvents. Reactive wastes include lithium-sulfur batteries and explosives that can cause explosions, toxic fumes, or gases and toxic wastes that are harmful to human health or environment when inhaled or ingested or disposed. Examples of toxic wastes include mercury and lead. These are wastes that contain both radioactive and hazardous waste components making them complicated to regulate. Low Level Mixed Wastes LLMW are generated from sources such as industrial, hospital, and nuclear power plant facilities and also from processes such as medical diagnostic testing and research, pharmaceutical and biotechnology development, pesticide research, and nuclear power plant operations. In addition, American industrial facilities generate and dispose of approximately 7. These levels may be much higher now in the 21st century. Disposal[ edit ] Before the s most of the waste generated was either landfilled or burned. These are technically designed areas where waste is disposed scientifically. They are characterized by liners that prevent seepage of leachates into the groundwater. According to an EPA report, the number of municipal solid waste landfills has gone down from in to in Combustion or incineration of waste reduces the amount of landfill space needed by burning waste in a controlled manner and also generates electricity through waste-to-energy technologies such as gasification , pyrolysis , anaerobic digestion , fermentation , etc. Transfer stations are intermediate facilities where the collected municipal solid waste is unloaded from collection trucks, compacted to reduce the volume of the waste, and held for a short time before it is reloaded onto larger, long-distance trucks or containers for shipment to landfills or other treatment and disposal facilities. Wastes are also good sources of raw materials. Recovery and recycling of wastes can help to reduce the use of virgin materials for producing new goods. Composting is a way to return nutrients back into the environment by allowing microorganisms to turn the waste into manure. Applying this manure to agricultural land can improve the fertility of the soil providing it essential nutrients. It is estimated that For example, it is estimated that a dairy cow produces approximately 40 pounds of waste dung, urine per day which can be dried and used as manure. Costs and problems associated with waste[ edit ] Some of the main issues associated with waste are open dumping , odor, particulate matter emissions, leachate seepage from landfills, greenhouse gas GHG emissions that lead to air pollution, surface and groundwater pollution , food chain contamination, land area depletion, human health impacts, environmental degradation, and negative impacts on plant and animal life. Rationales for solid waste policy[ edit ] Figure 3 - Demand Curve and Deadweight loss DWL , Based on Portney and Stavins , [22] Page All levels of government - federal, state, and local - are involved in regulating solid waste in United States. Portney and Stavins provide the following three rationales for government intervention in private waste markets: With regards to solid waste this principle applies to landfills where the average cost of landfill

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construction, operation, and maintenance decreases as waste disposed of increases. This propels interstate trade where private parties divert wastes to large regional landfills. Public bad - Waste creates dissatisfaction to people which reduces social benefits or increases social cost, making it the opposite of a public good. The government, through its policies, makes waste an "excludable" good or bad thereby creating opportunities for waste collection firms to charge the household, industrial, and commercial waste generators for proper collection and disposal. Negative externalities - Production of waste leads to environmental pollution especially when it is illegally disposed of, openly dumped, or burned, resulting in groundwater contamination or air pollution. It has been proven that emissions include high amounts of methane and trace amounts of benzene, hydrogen sulphide, and chlorinated hydrocarbons along with other gases. This demand curve and the deadweight loss DWL associated with waste disposal landfilling is illustrated in Figure 3. Mechanisms and policy framework[ edit ] The government has a wide variety of different policy tools at its disposal from which it can choose. Due to the diverse nature of solid waste, the government employs a number of different policy tools at various levels in order to ensure efficient and safe handling and disposal of the many different types of waste, as well as in order to encourage recycling and source reduction. The following is a sampling of tools the United States government employs with regards to solid waste. Container deposit legislation and Container deposit legislation in the United States Deposit-refund systems or container deposit legislation , also known as "bottle bills", can be viewed either as a tax on producing waste in the form of beverage containers or as a subsidy for properly recycling these containers. When a retailer buys products from a distributor, it must pay a deposit for each beverage container it purchases. However, the consumer is refunded this money by properly disposing of the used beverage container at a retail or redemption center. The retailer also recoups the deposit from the distributor. This system encourages consumers to properly dispose of the waste they generate by buying beverages in disposable containers. It also creates a privately funded system for the handling of this waste. A deposit-refund bill named National Beverage Container Reuse and Recycling Act was introduced by the House of Representatives in but never became federal law. Delaware repealed its bottle bill in Oregon was the first state to institute a bottle bill in The most common deposit is five cents, but this varies by state and by the type of container. Pay as you throw Pay as you throw is a model for pricing the disposal of municipal solid waste by unit of waste rather than by charging a uniform price for pickup and disposal. This acts as a tax on waste - the more waste a household produces, the more it will be charged for its disposal. Pay as you throw is administered on the municipal level. The purpose behind this system is to discourage waste generation and to encourage recycling. By charging citizens per unit of waste, municipalities hope to discourage waste generation by causing households to consider the quantity of waste they are producing by making them pay for it. In order to receive a permit, the party managing the waste has to meet certain criteria, as specified by the Act. Permits are used to set a minimum baseline of safety standards that must be met in the handling and disposal of waste in order to control this process and ensure a degree of safety is achieved. Technology standards[ edit ] Technology standards are another form of command and control regulation by the government. Technology standards stipulate certain types or levels of technologies that must be employed to ensure the safe storage or treatment of waste. For example, technology standards have been created for the design of landfills and there are requirements for the design of the liners in order to prevent leachate. These standards are set by the federal government, but can be made more stringent by states. Labeling[ edit ] Different labeling standards are required by the federal government and by some states for different types of waste such as hazardous waste and medical waste. In this way, labeling is also intended to help ensure proper handling and disposal. Challenges and goals[ edit ] The EPA has set forth challenges and goals with regards to solid waste. The Resource Conservation Challenge aims to: These challenges and goals are supported by voluntary programs and partnerships. Partnerships[ edit ] The EPA has established a number of partnerships with businesses and organizations, industries, states, local governments, tribes, and other entities to reduce and effectively manage waste. All of these examples aim to meet the goals of the Resource Conservation Challenge. Entities may enter into these partnerships because of a variety of expected benefits, including costs

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## Chapter 4 : Overview and Objectives of Hazardous Waste Management

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Is asbestos regulated as a hazardous waste? Asbestos is not regulated as a hazardous waste. The Solid Waste Permitting group issues permits for asbestos disposal sites. This program is not delegated to the State of Oklahoma. Both the TSCA and hazardous waste regulations apply to such mixtures. Are fluorescent light bulbs regulated as hazardous waste? Fluorescent light bulbs are regulated as a Universal Waste. The hotline number is You may also find hotline summary reports for the last twelve years at [http:](http://) The EPA also maintains a database of regulatory interpretations. What is the telephone number for reporting spills? The DEQ spill reporting hotline is The National Response Center hotline is Both numbers operate 24 hours a day seven days a week. Credit Card orders may be made at If I am driving through the state with a shipment of hazardous waste, am I required to register as a hazardous waste transporter? The OCC number is How do I register to be a transporter of hazardous waste? Oklahoma does not have its own version of the Uniform Hazardous Waste Manifest. The procedure for acquisition of hazardous waste manifests may be found in 40 CFR See the Manifest FAQ for more information What is a Disposal Plan and who is required to have one? See Disposal Plan procedures page. The disposal plan FAQ will answer the most common questions. This web app does not work with versions of IE higher than 9. To force it to work with version do this: A drop-down list will be displayed. It can be obtained online by clicking [HERE](#). The instructions may be obtained online by clicking [HERE](#). Following review, an ID number is assigned by our office. Turnaround time for these is about two weeks excluding mailing time. For subsequent notifications, submitter should check the DEQ web page to verify the change has been made. These numbers can be assigned at the time of the telephone call for emergency situations only. Information needed to assign the provisional number is the name of the generator, location where the waste is generated, cause of generation, and contact person. The location must have a street address or distance from a highway intersection in addition to the city and county. If the location is in a rural area, use the name of the nearest town. A completed notification form EPA Form is required within 10 days of receiving a provisional number over the telephone. You can find a link to the forms in the paragraph above. The Biennial Report covers odd numbered calendar years, and is due by March 1st of even numbered years e. Printed copies may be obtained from the National Technical Information Service at How can I get a copy of the Capacity Assurance Plan? Photocopied versions of the form may be ordered from the Land Protection Division. Click here for Acrobat version. Click here for Text version. Where are hazardous waste manifests returned to in the state of Oklahoma? Only uniform hazardous waste manifests documenting international shipments of hazardous waste or wastes generated by the DEQ need to be returned to the Oklahoma Department of Environmental Quality. All others sent to the DEQ will be recycled. Historical copies of manifests are stored in two locations. Manifests covering the period from to are stored in the Oklahoma State Archives located at the State Department of Libraries. Between and manifests are stored off site and may be reviewed at the convenience of the Land Protection Division. It will be necessary to make an appointment to review them. What are the procedures for remediating soil contaminated with petroleum? Also checkout the Diesel and Gasoline Spills Fact sheet. My property was used for a methamphetamine meth lab and I have been instructed by local authorities to clean it up. What do I do? KCI formerly Koch Crime Institute also has a web site describing how to clean up properties formerly used as meth labs at [http:](http://) Underground storage tanks are regulated by the Oklahoma Corporation Commission. They also regulate above ground storage tanks containing petroleum products. The Land Protection Division only regulates tanks containing hazardous waste. How do I change my notification status? The only way to change your notification information to complete the Notification of Regulated Waste Activities form and submit it to our office. If your facility has closed or gone out of business, you may complete this form from the DEQ Web Page to close out the active

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status. Does Oklahoma have state specific waste codes? Oklahoma does not have state specific waste codes. However, we recognize the potential to recycle these materials for which the generator is obligated to demonstrate them to be recycled material to be qualified for exclusion [ 40 CFR If I made an error completing my monthly or quarterly report, how do I correct it? To correct an error on a report already submitted to DEQ, you should make a copy of the report you submitted, mark it revised, add the corrections and mark the corrections as revised. How much does it cost to dispose of my hazardous waste? Disposal of hazardous waste is performed by private enterprise. The Department of Environmental Quality does not regulate what disposal companies charge to dispose of your hazardous waste. The cost will vary depending on what kind of waste is generated, how difficult it is to dispose of, how much and how often waste will be generated and how good a negotiator you are at fixing your disposal cost. The amount varies so much that DEQ does not even attempt to quantify disposal fees charged by disposal companies. Oklahoma large quantity generators are required to submit a quarterly report summarizing wastes generated in a given calendar quarter. Click here for the most recently revised quarterly report form. TSD facilities are required to submit a monthly report summarizing wastes treated, stored or disposed of each month. Click here for the Monthly report form. What method should I use to analyze hazardous waste for characterization by DEQ? Does the Land Protection Division regulate product storage tanks? How can my school dispose of its hazardous waste? Oklahoma schools that utilize DEQ to assist in disposal must use the state contract to dispose of their hazardous wastes. Otherwise, a school can utilize any authorized environmental contactor or permitted disposal facility. These companies can be found by performing a general internet search for "hazardous waste disposal" or contacting the DEQ for additional assistance. Public Schools should also check this link for help from DEQ. What regulations apply when a handler changes generator status for a time period within a given year? For the quarter in which the waste is generated, he must comply with the standards applicable to his changed generator status. If he becomes an large quantity generator LQG , he must comply with Oklahoma Administrative code Chapter 5 which includes having a disposal plan, making quarterly reports for the quarters the disposal plan is active and manifesting waste and payment of applicable fees Chapter 21 paragraph 2 and if in an odd numbered year submit the federally required biennial report for the entire year. He should also comply with the appropriate 40 CFR regulations applicable to the way waste is handled see 40 CFR This includes having a personnel training program 40 CFR Subpart D plus specific means in which the waste is handled at the facility I. Briefly in the quarter in which large quantity hazardous waste is generated, he must comply with all regulations applicable to large quantity generators. A conditionally exempt generator who generates more than pounds of non-acutely hazardous waste must comply the regulations applicable to a small quantity generator which includes having an EPA ID number and complying with the provisions of 40 CFR The Freedom of Information Act applies only to the federal government. The Land Protection Division has records relating only to entities it regulates. Those concerning above ground storage tanks containing petroleum products should also be addressed to OCC. The Air Quality Division regulates emissions from certain storage tanks. Other above ground product storage tanks are not regulated by the Land Protection Division except those storage tanks that stored Hazardous Waste. Those facilities regulated by the Land Protection Division may be found here.

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## Chapter 5 : SER - EH Vol 1 - Chapter 10 - Hazardous Waste

*State and Local Issues in Transportation of Hazardous Waste Materials: Towards a National Strategy: Proceedings of the National Conference on Hazardous Waste Materials by Mark D. Abkowitz (Author), Kostas G. Zografos (Editor).*

Be it used plastic bag, broken glass, obsolete cell phone, or used battery cells, they are all used products that require appropriate disposal to limit their harm to the environment. Waste disposal is therefore a systematic action for managing waste from its origin to its final disposal. Because waste disposal involves a myriad of processes such as collection, transportation, dumping, recycling, or sewage treatment among other waste product monitoring and regulation measures, there are lots of problems associated with waste disposal. Here are the common waste disposal problems and their solutions. Various Waste Disposal Problems Production of too much waste One of the major waste disposal problems is attributed to the generation of too much waste. America alone is responsible for the producing of about million tons of waste annually. This is about 2. According to the World Bank report, the average global municipal solid waste MSW generation per person on daily basis is about 1. It therefore means that every state and local authority suffer the problem of effective waste disposal due to the generation of too much waste. The problem is that the present era is driven by a throw-away consumerism with companies and producers striving to maximize profits by producing one-time use products without prioritizing on reuse, recycling or the use of environmentally friendly materials. Most of the waste is toxic The majority of the state and local authority legislations are generally lax on regulating the ever-expanding manufacturing industries. On a daily basis, these industries produce toxic products that end up getting thrown away after use. Most of the products contain hazardous and health-threatening chemicals. A report by the U. EPA indicates that more than 60, untested chemicals are present in the consumer products in our homes. There are even products known to contain toxic chemicals, such as Biphenyl-A BPA " often present in plastic toys, but they are still poorly regulated. Landfills are a problem as well Most landfills lack proper on-site waste management thereby contributing to additional threats to the environment. In the long-term, landfills leak and pollute ground water and other neighboring environmental habitats making waste management very difficult. They also give off potentially unsafe gases. Also, the laws and regulation guiding the operations of landfills are often lax at monitoring and regulating the different types of wastes namely medical waste , municipal waste, special waste or hazardous waste. With this kind of laxity of the laws in landfill waste management , the landfills toxicity and hazardous nature significantly increases to a point where the landfill waste problems often lasts for up to 30 years. Regulations are based on vested interests Since waste disposal and management has become a profit making venture, those who advocate for safe, quality and proper management of waste disposal are outmatched by industries in the business. Large enterprises in the waste disposal business dictate all aspects of the market from operating landfills, sewer systems and incinerators to recycling facilities. The corporations simply aim at making profits regardless of the waste reduction requirements or the resultant destructive environment impacts. As such, they collaborate with vested interest regulators thereby creating a big problem in the effective regulation of waste disposal, which has worsened the devotions to waste reduction and recycling programs. To make matters worse, even some state officials work together with such industry officials to expand landfills, increase waste tonnage, and develop new waste disposal or recycling or treatment facilities to augment profits. Reliance of dying technologies to reduce and recycle waste Waste disposal and management facilities as well as state resources have continued to rely on myopic and quickie solutions instead of developing effective recycling and waste reduction programs. Consequently, it has created continued reliance on the use of outdated technologies to deal with waste disposal. The problem is that most states are reluctant and less creative towards advancing novel technologies for reducing the toxicity and volume of waste or enhancing recycling , especially solid waste. As much as burning waste to produce energy is considered green because it does not involve the use fossil fuel, it still releases toxic materials into the environment. Therefore, the technologies simply divert concentration

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from the development of cleaner recycling and waste reduction technologies. Local communities, authorities and states need to put more efforts towards the education of waste management. Essentially, the slogan can help reduce the levels of unsustainable waste that prove problematic in various environments across the globe. With the implementation and consistent practice of the three Rs, communities and local authorities as well as states will not only be able to manage waste but also move in the direction of achieving zero waste. More emphasis should be placed on responsible resource use with an objective of avoidance, maximizing recycling and waste reduction methods. Avoidance and waste reduction involves techniques such as repair of broken things instead of buying new, purchasing and re-using second-hand items, and designing reusable and recyclable products. Effective waste disposal and management An effective strategy for municipal waste disposal and management can offer improved solutions for the various problems associated with waste materials. It ensures there is gradual improvement of new and cost-effective facilities which aim to encourage higher environmental protection standards. An effective management strategy will also see to it that landfills are purposefully located to ease waste collection, transfer, and monitoring or recycling. This can be achieved through the implementation of waste disposal plan which must include proper monitoring and regulation of municipal solid and food waste , livestock waste, sewage sludge, clinical waste, and construction waste. Control and monitoring of land filling and fly-tipping activities Thousands of tones of construction and demolition materials are generated by various local construction industries. In most cases, a large portion of these waste materials can be re-used, reclaimed or recycled. With the control and monitoring of land filling and fly-tipping activities in the area of public works, construction and demolition materials can be resourcefully reclaimed, reused or recycled in other projects such as landscaping, village houses, recreation facilities or car parks, or roads. By applying these techniques and monitoring fly-tipping activities, the construction and demolition materials that sometime go into landfills which further worsen the management of solid waste can easily be managed. Waste Diversion Plans A multifaceted approach on waste transfer and diversion in terms of more hygienic and efficient waste disposal management can offer tremendous solution to waste problems. To address most of the waste problems, especially landfills and sewer material, the local authorities and state waste management facilities need to formulate waste diversion plans, with an objective of making certain that there is convenient and proper waste disposal at landfills and waste transfer facilities. Therefore, to mitigate the problems that come with thermal waste treatments “ issues such as emission of toxic gases with organic compounds such as furans, PAHs, and dioxins ; states and researchers as well as green groups and academicians can explore the possible developments with regards to advanced thermal waste treatment techniques. Appropriate and improved thermal waste treatment technology is important as a strategy for tackling the environmental concerns. Polluter pays principle and eco-product responsibility Polluter pay principle is where the law requires the polluter to pay for the impact caused to the environment. When it comes to waste management, the principle will require those who generate waste to pay for the suitable disposal of non-reclaimable materials. Eco-product responsibility policy, on the other hand, is a tool for waste reduction, recovery and recycling. It is achieved by requiring producers, wholesalers, importers and retailers to share responsibility for the collection, treatment, disposal and recycling of used products with an aim of cutting back and steering clear of the environmental impacts caused by such products. All these measures must have a view to reduce wastage and encourage re-use and recycling.

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## Chapter 6 : Learn the Basics of Hazardous Waste | Hazardous Waste | US EPA

*Developing High-Risk Scenarios and Countermeasure Ideas for Mitigation of Hazardous Materials Incidents. Kansas State University (KSU) conducted a comprehensive study of the development of a set of prioritized, extreme-risk scenarios, the development of a set of feasible, practical and implementable protective systems, and a report to summarize guidelines on the use of these protective systems.*

Optimal routing of hazardous materials in stochastic, time-varying transportation networks by Elise Miller-hooks, Hani, S. Mahmassani - Transportation Research Record , " The selection of routes in a network along which to transport hazardous materials is explored, taking into consideration several key factors pertaining to the length of time of the transport and the risk of population exposure in the event of an incident. That travel time and risk measures are not constant over time and at best can be known with uncertainty is explicitly recognized in the routing decisions. Existing approaches typically assume static conditions, possibly resulting in inefficient route selection and unnecessary risk exposure. Several procedures for determining superior paths for the transport of hazardous materials in stochastic, time-varying networks are presented. These procedures and their extensions are illustrated systematically for an example application using the Texas highway network. The application illustrates the tradeoffs between the information obtained in the solution and computational efficiency, and highlights the benefits of incorporating these procedures in a decision-support system for hazardous material shipment routing

Optimal Routing of Hazardous Substances in Time-Varying, Stochastic Transportation Networks by Elise Miller-Hooks, Hani S. Mahmassani , " This report is concerned with the selection of routes in a network along which to transport hazardous substances, taking into consideration several key factors pertaining to the cost of transport and the risk of population exposure in the event of an accident. Furthermore, the fact that travel time and the risk measures are not constant over time is explicitly recognized in the routing decisions. The report describes the application of recent advances in network analysis methodologies to the problem of routing hazardous substances. Several specific problem formulations are presented, reflecting different degrees of risk aversion on the part of the decision-maker, as well as different possible operational scenarios. All procedures explicitly consider travel times and travel costs including risk measures to be stochastic time-varying quantities. The movement of Dangerous Goods on the roads through a major city represents a challenge to transportation engineers, enforcement officers, and emergency response personnel. One of these challenges is the establishment of a Dangerous Goods Route network. Road safety is a key criterion in the effective selection of Dangerous Goods Routes. The criteria established for the selection of Dangerous Goods Routes can be equally applicable for other cities in Canada, with minor modifications for local conditions.

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## Chapter 7 : Resource Conservation and Recovery Act (RCRA) and Federal Facilities | Enforcement | US E

*Part of: State and Local Issues in Transportation of Hazardous Waste Materials: Towards a National Strategy Abstract: This paper discusses the evolution and current status of the Hazardous Materials Incident Report System (HMIRS) maintained by the Research and Special Programs Administration (RSPA) of the U.S. Department of Transportation (DOT).*

The goals and objectives of RCRA are to: Congress intends that these goals and objectives be achieved by: Highlights of the new Act are: Also note that hazardous waste is a sub-set of the overall solid waste definition. Not less than 20 percent of general appropriation funds are to be set aside for this purpose. Given the expanded solid waste and disposal definitions, these criteria may well apply to many other land disposal practices besides the traditional "landfill" for garbage and refuse. Compliance with the prohibition on open dumping can take no longer than five years after the inventory is published, in any event. Thus, seven years from now, in , all open dumping will be prohibited. This provision will have a profound impact on solid waste management practices in this country, particularly in rural areas. A substantial new planning and implementation grant program for State and local governments is provided for this purpose. These comprehensive solid waste management plans will represent a major new thrust in many States. This includes reporting and permit requirements. Thus, for the first time, Federal facilities will require State or local solid waste permits. This is a major departure from precedent established under air and water pollution control laws. The new Act contains many other important provisions, but time, and, I suspect, your patience, will not allow me to cover them here. The highlights noted above should give you a sense of the new scope and direction Congress intends for the solid waste management activities in this country. For the first time, Congress has mandated Federal regulatory control over land disposal of hazardous waste. At the same time, Congress made it clear that the States should implement the hazardous waste regulatory program as part of a comprehensive solid waste management program. Special State grants for development and implementation of hazardous waste management programs are included in the new Act for that purpose. Before RCRA, the Federal hazardous waste management program was aimed at developing a better data base concerning hazardous waste characteristics, damage assessment, and control technology options; translating these data into advisory guidances; assisting the States to develop their programs; and providing technical assistance as needed. After RCRA, most of these elements remain in the Federal program, but the emphasis has shifted to developing a comprehensive, integrated set of national standards for the definition and "cradle-to-grave" management of hazardous waste. What were to be guidances will now be Federal regulations. Instead of saying "you should do so-and-so," EPA can now say "you shall do so-and-so. We are now mandated to say how hazardous wastes will be managed. The program we develop has got to be tough enough to adequately protect the public health and environment, and yet be practical enough that State and local governments can implement it, and the private sector can live with it. The program is to be developed and in operation by October This is a tall order. Clearly, EPA cannot do it alone. Most people would agree that the State government level is the optimum level to implement a hazardous waste management regulatory program. Many hazardous wastes are transportable, and are in fact transported for hundreds of miles to treatment and disposal sites within the State, or outside the State of origin. Local and regional governments are not well equipped to deal with this. And yet the private sector, and many States, would like to see uniform national standards for hazardous waste management to remove the spectre of each State having different standards, definitions, and criteria. Local governments also have a strong say in the matter, since the hazardous waste treatment and disposal facilities, which must be developed to make the regulatory program work, will be located in their jurisdictions. Fortunately, most States agree with this premise. Several States have already begun to develop hazardous waste management programs on their own, ahead of the Federal program. As has been the case in other environmental areas, the State of California was the first to develop and operate a

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hazardous waste management program. The Federal government and most other State and local governments have a lot to learn from the California experience in this area. Later in the program we will get a full briefing by California State and county personnel on how they did it and how their program is working. I will be taking notes. They include a hazardous waste definition; national standards for hazardous waste generators, transporters, and treatment, storage and disposal facilities; a facility permit program; guidelines for State assumption of the program; and a one-time notification system to government by anyone who generates, transports, treats, stores, or disposes of hazardous waste. But perhaps it would be of interest to discuss how all these provisions fit together into an integrated program. Figure 1 is an attempt to pull all of the provisions together on one page with an indication of their interrelationships. The keystone of the program is the definition of hazardous waste. This element determines the scope of the program, and thus has an influence on whether or not States choose to participate in the program. Our goal is to base the hazardous waste definition on objective criteria for hazardous parameters such as flammability, corrosivity, toxicity, etc. This implies the development of standard sampling and analysis methods by which a waste can be tested against these criteria. Wastes which are found to be hazardous will then be placed on a list. We view these standards as minimum levels of performance somewhat analogous to speed limits. They are independent, enforceable standards; various legal sanctions can be applied to violators. Note that all parties subject to the standards are required to notify EPA, or the State if they have an authorized program, during a day period following final publication of the hazardous waste definition. Common elements of all the standards are recordkeeping and reporting requirements, and compliance with a manifest system, which is a waste tracking and control mechanism to ensure that hazardous wastes are transported to approved treatment and disposal facilities. Each hazardous waste shipment will require a manifest. Thus we are talking about tens of thousands of transactions per year on a national basis. This implies that the manifest must be compatible with ADP systems. Since hazardous wastes are often transported across State lines, we are coming to the conclusion that the manifest system should be uniform across the nation, if at all possible. Generators and transporters who do not have such facilities do not require a permit. We look upon the permit system in a positive sense. Whereas someone who violates a national standard can be punished, a hazardous waste facility can only obtain a permit if the Federal or State authorities believe the surrounding community will be safe from harm. If we can impart this concept to the public, and preserve the integrity of the permit system, we will go a long way towards overcoming public opposition to siting new hazardous waste facilities. Among other things, implementation implies issuing hazardous waste facility permits, along with inspection and compliance enforcement activities. Several States, including California, do these things already, at least to some extent. One potential problem is that State programs, in order to be given implementation authority for RCRA, must be "equivalent" to the Federal program and "consistent" with other State programs. We are wrestling with the interpretation of these terms now. The Congress evidently foresaw this problem, however, and provided for interim authorization, of State programs for a month period while the details of full authorization are being worked out. We intend to be liberal in our requirements for interim authorization, with the understanding that State programs will achieve equivalency 13 in the month transition period. Federal grant funds are mandated for the development and implementation of these State programs. In total, then, the hazardous waste management program mandated by RCRA is an integrated, comprehensive program keyed to the definition of hazardous waste, followed by a series of implementation provisions. These provisions consist of national standards, a notification system, and a facility permit system developed by the Federal government to provide national consistency, but intended to be implemented and enforced by State governments with Federal financial and technical assistance. We believe this is a sensible and practical approach. The interplay between these program elements is complex, however, and most likely will require several iterations as the program develops and matures. Current Status of Regulation Development You may be interested in our progress to date. OSW has produced Development Plans for each hazardous waste regulation. The Development Plans contain a statement of the purpose of the regulation; identify major issues; outline how we will coordinate regulation

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development with other EPA offices, and with State and local governments, other Federal agencies, the Congress, and the public; describe anticipated requirements for environmental and economic impact appraisals; 14 and provide an anticipated schedule for regulation promulgation. At present we are projecting final promulgation of the hazardous waste regulations in April, or 18 months after RCRA enactment as mandated by the new law. Next, we are now preparing Advanced Notices of Proposed Rulemaking, which will be published in the Federal Register in the next few months. These documents are intended to alert the public that EPA is embarking on the regulatory development process, and to solicit public comment on a number of issues and options being considered by the Agency. We hope you will comment on the issues and options discussed in them; we need your input. Each regulation will be developed by a Working Group composed of representatives from EPA Headquarters and regional offices, and where appropriate, from other Federal agencies and State and local governments. For example, the Department of Transportation will be represented on the hazardous waste transporter standards Working Group. State and local government representatives will be invited to participate in the Working Groups developing the State hazardous waste program guidelines and the facility permit regulations. All of these Working Groups will be activated this month. Public Participation EPA intends to provide ample opportunities for public participation in the development of the hazardous waste regulatory program. We have already held a public meeting on the new Act in Washington, D. Similar public 15 meetings are scheduled in all 10 EPA regions throughout the country in late February and March of this year. Two sets of public hearings on each regulation are planned. Another series is planned after the proposed regulations, but before. Further, OSW intends to form an Advisory Committee which will have a wide range of representatives from the public and private sectors. We will look to the Advisory Committee for review and comment on the hazardous waste regulations as they develop. In addition, there will be a series of conferences and workshops on specific technical issues as they crop up. For example, we are already planning such a conference to discuss the application of standard leaching tests as they relate to the question of hazardous waste definition. Finally, we plan to develop a public education program to effectively communicate the essence of hazardous waste issues to the general public. The public education program being pursued by the State of Minnesota as part of the Chemical Waste Landfill Grant program will provide useful input to the national program. Clearly, the hazardous waste management program cannot succeed without public understanding and support. The hazardous waste management program is a sub-set of this overall program. While our attention is now focused on developing the new hazardous waste regulations and guidelines mandated by the Act, we also will continue our technical assistance and public education efforts. In the long view, the regulations are but the first step in the national hazardous waste management program. It will take a joint effort by Federal, State and local governments, by industry, and by the public to translate these beginnings into an effective program to protect the public health and environment from the potential damage inherent in improper hazardous waste disposal practices. The Congress has given us the green light to proceed with this program. It will be up to all of us to make it work.

### Chapter 8 : Hazardous Materials Data: A Federal Perspective

*Use of Advanced Technologies for Improving Hazmat Transportation Safety," State and Local Issues in Transportation of Hazardous Waste Materials: Towards a National Strategy ()*.

### Chapter 9 : Hazardous Waste FAQs

*waste management and pollution control strategy, our environment has become constantly strewn with litter and uncollected garbage. Rubbish has been dumped in rivers, lakes, water ways, bushes, roads and public areas.*