

managers and arborists should be consulted in much more than a dutiful way before tax dollars are allocated to research or to implementation programs. Communication among all levels of government and private practitioners is a good first step toward accomplishing solutions to urban forest problems.

Literature Cited

1. Bassett, John R. and W.C. Lawrence. 1975. *Status of street tree inventories in the US*. J. Arbor. 1:48-52.
2. Foster, Ruth S. and Joan Blaine. 1978. *Urban tree survival: trees in the sidewalk*. J. Arbor 4(1): 14-17.
3. Gardescu, Paul. 1976. in *Better Trees for Metropolitan Landscapes*. Sym-Oroc USDA For Serv Gen Tech Rpt NE-22.

4. Gerhold, H.D., et al. 1975. Genetic Information needed for metropolitan trees. J. For. March, pp 150-153.
5. Gerhold, Henry D. and Kim C. Steiner. 1976. in *Better trees for metropolitan landscapes*. Sym-Proc USDA For Serv Gen Tech Rpt NE-22, pp 159-166.
6. Harris, Louis. 1970. Life magazine. Jan. 9. p 103.
7. Ottman, Kenneth A. and J.J. Kielbaso. 1976. *Managing municipal trees*. International City Mgt. Assn, Urban Data Service Report, Vol. 8, No. 11.

*Urban Forestry Consultant
Rubens Tree Service
White River Junction, Vermont*

EPA SPILL REGULATIONS

Hazardous-material spill regulations were announced recently by the Environmental Protection Agency. The regulations providing for large civil penalties to prevent spills by improving packaging and handling techniques, apply to all facilities that can cause chemical spills, including industrial plants, storage facilities, and transportation vehicles such as trucks, railroad tank cars, and tanker vessels. The regulations, applying initially to 271 hazardous chemicals, specify five categories based on relative toxicity. A designated "harmful quantity" ranging from one pound to 5,000 pounds, specifies the amount of a particular chemical that is considered hazardous when dumped or spilled.

In cases of spills or discharges of harmful quantities, responsible parties are liable for cleanup costs and may also face civil penalties of up to \$5 million. The Government could recover cleanup costs up to \$50 million, with no limit on the discharger's liability in cases of "willful negligence." Failure to report a spill or discharge of a harmful quantity could result in criminal penalties of up to \$10,000 or a year in jail or both.

In addition to adopting the final spill regulations on the 271 chemicals, EPA also proposed adding an additional 28 chemicals, including kepone and

carbon tetrachloride, which have been involved in serious spills in Virginia and Ohio respectively in the past two years.

The regulations "place the responsibility upon dischargers to notify federal authorities, and appropriate state or local authorities, immediately when a spill or other illegal discharge occurs," EPA Administrator Douglas M. Costle said in a prepared statement announcing the regulations at a press conference. The regulations "require those who are responsible to pay the costs of cleaning up a spill," he said.

Toxicity to aquatic life resulting from short-term exposures was EPA's first consideration in choosing substances to be covered by the regulations, Costle said. "Substances were chosen based on their demonstrated toxicity to aquatic animals and the fact that their widespread use by industry gives them a reasonable chance for spillage." He said those criteria are being revised to include also chemicals causing cancer, birth defects, and genetic abnormalities from long-term exposures. "We will also include those that are dangerous primarily because they accumulate in animal tissue and thus threaten the aquatic food chain," Costle said.

"We know that at least 700 damaging spills oc-

cur each year from tank cars that break open, from train derailments, from ships that run aground, from storage tanks that leak, from rusty valves and pipes that won't work, and from people who deliberately pour chemicals into sewer systems, ditches, and rivers," Costle said. "The result can be unsafe drinking water, fish kills, wildlife destruction, evacuation of communities, and even loss of life." Many of the accidents result from "an appalling negligence and lack of good management practices," Costle said.

The regulatory package adopted by EPA consists of four parts:

The initial list of hazardous substances. The list was developed through toxicity tests on fish and shellfish and analysis of data on production, distribution and use. All substances on the list are hazardous and have a reasonable chance for spillage due to their widespread use. EPA may add to the list as the need develops.

Determination of which substances are "removable" once spilled. Whether or not a substance can be physically removed from waterways is one factor that may affect the size of penalties imposed. Almost all the substances were determined to be 'nonremovable' due to their chemical and physical properties. Even so, the discharger is encouraged to take prompt action to minimize the damage resulting from a spill. Doing this may reduce some of the penalties imposed.

Determination of what amount is a "harmful quantity" when spilled. The law requires that this be defined for purposes of spill reporting and enforcement action. Based on their relative potential hazard, the substances were divided into five groups. A relative 'harmful quantity' was then assigned to each group: for the most toxic group,

that amount was determined to be one pound. The remaining four less toxic categories were assigned proportionally larger harmful quantities.

Establishment of appropriate penalties. The 1972 Act authorizes civil fines up to \$5 million for vessels and \$500,000 for other facilities for each discharge or spill in excess of the established harmful quantity. This is intended to promote the development and use of preventive measures. Any fine over \$5,000 will be determined by the gravity of the offense. This is calculated using such factors as the size of the spill, the degree to which the responsible party is at fault, the degree to which the chemical dilutes and degrades in water, and the nature and success of efforts taken to lessen the spill's harmful effects. Penalties must by law be imposed for failure to notify the Coast Guard immediately when a spill occurs.

Included in the following list are a few of the 271 substances that have been or may be transported by arborists in their daily work: acetic acid, aldrin, benzene, captan, carbaryl, carbon disulfide, chlordane, chlorine, cresol, cupric sulfate, 2,4-D acid, 2,4-D esters, DDT, diazinon, dicamba, dichlone, dieldrin, diquat, disulfoton, diuron, endrin, ethion, ferric ammonium citrate, ferric sulfate, ferrous ammonium sulfate, ferrous sulfate, guthion, heptachlor, hydrochloric acid, kelthane, lead arsenate, lindane, malathion, maleic anhydride, methoxychlor, naphthalene, parathion, pentachlorophenol, phenol, potassium permanganate, pyrethrins, sodium arsenate, sodium arsenite, sodium hydroxide, sodium hypochlorite, strychnine, sulfuric acid, 2,4,5-T acid, 2,4,5-T esters, toluene, toxaphene, trichlorophenol, xylene, xylenol, and zinc sulfate. A complete list is available from an EPA regional office.
