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Summary of Scoping Issues for the
**Environmental Impact Statement on
TxDOT's Pest Management Program**

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Research Report 1933-1
Research Study 2-18-91-1933
Roadside Vegetation Management Program

Sponsored by:
Texas Department of Transportation

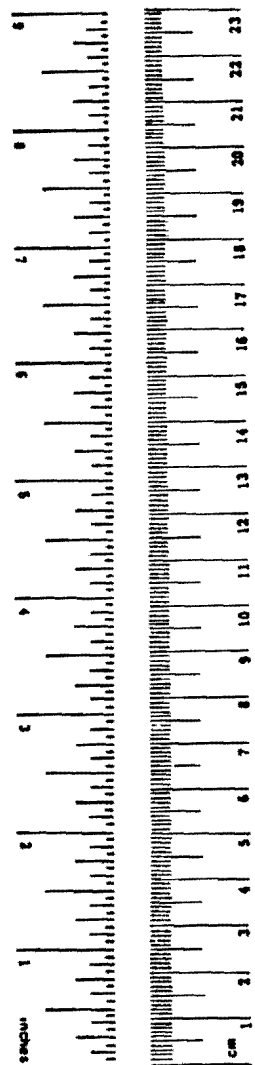
Texas Transportation Institute
The Texas A&M University System
College Station, Texas

February 1992

METRIC (SI*) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
LENGTH				
in	inches	2.54	centimetres	cm
ft	feet	0.3048	metres	m
yd	yards	0.914	metres	m
mi	miles	1.61	kilometres	km



AREA				
in ²	square inches	645.2	centimetres squared	cm ²
ft ²	square feet	0.0929	metres squared	m ²
yd ²	square yards	0.836	metres squared	m ²
mi ²	square miles	2.59	kilometres squared	km ²
ac	acres	0.395	hectares	ha

MASS (weight)				
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams	Mg

VOLUME				
fl oz	fluid ounces	29.57	millilitres	mL
gal	gallons	3.785	litres	L
ft ³	cubic feet	0.0328	metres cubed	m ³
yd ³	cubic yards	0.0765	metres cubed	m ³

NOTE: Volumes greater than 1000 L shall be shown in m³.

TEMPERATURE (exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
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APPROXIMATE CONVERSIONS TO SI UNITS

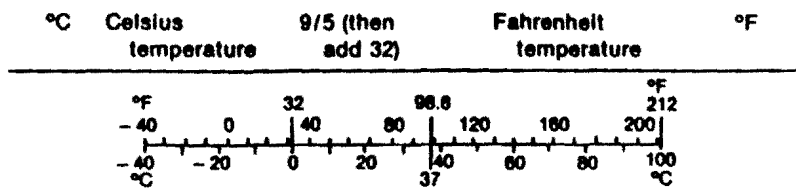
Symbol	When You Know	Multiply By	To Find	Symbol
LENGTH				
mm	millimetres	0.039	inches	in
m	metres	3.28	feet	ft
m	metres	1.09	yards	yd
km	kilometres	0.621	miles	mi

AREA				
mm ²	millimetres squared	0.0016	square inches	in ²
m ²	metres squared	10.764	square feet	ft ²
km ²	kilometres squared	0.39	square miles	mi ²
ha	hectares (10 000 m ²)	2.53	acres	ac

MASS (weight)				
g	grams	0.0353	ounces	oz
kg	kilograms	2.205	pounds	lb
Mg	megagrams (1 000 kg)	1.103	short tons	T

VOLUME				
mL	millilitres	0.034	fluid ounces	fl oz
L	litres	0.264	gallons	gal
m ³	metres cubed	35.315	cubic feet	ft ³
m ³	metres cubed	1.308	cubic yards	yd ³

TEMPERATURE (exact)



These factors conform to the requirement of FHWA Order 5190.1A.

* SI is the symbol for the International System of Measurements

Summary:

The Texas Department of Transportation (TxDOT) is undertaking the proactive initiative to prepare an environmental impact statement (EIS) on the use of selected chemicals for pest control in highway maintenance. Scoping in the initial stage of EIS preparation offers the public and other agencies an opportunity to identify significant environmental issues and suggest reasonable program alternatives and mitigation measures which should be addressed in the EIS.

Scoping input was obtained through official public announcement and a selective mailing. A Notice of Intent (NOI) was published in the *Texas Register*, pages 2330-2331, on April 23, 1991. Respondents were asked to submit comments by May 30, 1991. In addition, 35 Letters of Intent (LOI), dated May 29, 1991, were sent to selected individuals, government agencies, and groups known to have an interest in the interaction of highways and the environment. A copy of TxDOT's Herbicide Application Summary Chart was enclosed in each letter for reference. Respondents were asked to submit comments by June 28, 1991. Four additional sources volunteered responses, yielding a total of 16 responses from 39 contacts. This represents a return of 41 percent.

This report is a compilation of the issues raised in respondents' comments.

Implementation Statement:

This report is a compilation of issues raised in the initial stage of the preparation of an environmental impact statement. The contents are for reference purposes only and require no implementation by TxDOT.

Acknowledgements:

The authors gratefully acknowledge the participation of individuals, citizens' groups, and government agencies in this scoping effort concerning the impacts of roadside maintenance on the environment. The input received will be important in establishing parameters for a draft environmental impact statement (EIS) concerning the use of pesticides in highway maintenance.

The Environmental Section, Highway Design Division D-8 (TxDOT), furnished a list of individuals, groups, and agencies concerned with the impacts of highways on the environment.

Disclaimers:

The comments published in this report do not necessarily reflect the official views or concerns of TxDOT, and do not constitute a standard, specification, or regulation. Further, this report is not intended for construction, bidding, or permit purposes. The authors are responsible for the accuracy of data in this report.

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THE INITIATIVE

The Texas Department of Transportation (TxDOT), as the lead agency, is undertaking the proactive initiative to prepare an environmental impact statement (EIS) on the use of selected chemicals for pest control within the highway facility. This EIS will address current and anticipated environmental concerns regarding the impacts of these chemicals on various environmental resources. Both plant and insect pests are of concern in highway maintenance.

The selected statewide pest management program will use a combination of herbicides in concert with mechanical, manual, and biological techniques to control or remove vegetation along certain portions of the highway right-of-way (ROW). This program will ensure the safety of highway users and workers, maintain capital investment in the roadbed and other highway facilities, reduce fire hazards, and maintain visual quality along the highway corridor.

Insecticides are used in highway maintenance to ensure the safety of the public and TxDOT personnel and to maintain capital investment in highway facilities. Insect pests are an annoyance to visitors of rest areas and other public facilities. Fire ants are known to inhabit electrical boxes and disable signal equipment. Both fire ants and wasps may jeopardize the safety of TxDOT personnel servicing electrical signal boxes and highway luminaires. Ants promote pavement deterioration through invasion of and colony construction in the roadway base.

Purpose of Scoping

Scoping in the initial stage of EIS preparation offers the public and other agencies an opportunity to identify significant environmental issues and suggest reasonable program alternatives and mitigation measures which should be addressed in the EIS. Scoping continues throughout the later stages which culminate in the development of a final EIS. The addressing of concerns expressed following draft EIS completion and issuance for public review characterizes the ongoing nature of scoping in the preparation of a final EIS.

Scoping Process

Scoping input was obtained through official public announcement and a selective mailing. A Notice of Intent (NOI) was published in the *Texas Register*, pages 2330-2331, on April 23, 1991. Respondents were asked to submit comments by May 30, 1991. In addition, 35 Letters of Intent (LOI), dated May 29, 1991, were sent to selected individuals, government agencies, and groups known to have an interest in the interaction of highways and the environment. A copy of TxDOT's Herbicide Application Summary Chart was enclosed in each letter for reference. Respondents were asked to submit comments by June 28, 1991. Four additional sources volunteered responses, yielding a total of 16 responses from 39 contacts. This represents a return of 41 percent.

Respondents' comments are categorized in this report as follows:

- * Concern for Human Health and Safety,
- * Concern for Vegetation,
- * Concern for Water and Aquatic Resource Quality,
- * Concern for Soil Quality,
- * Concern for Air Quality,
- * Concern for Fish and Wildlife,
- * Concern for Visual Quality,
- * Concern for Calculation of Total Cost per Method,
- * Concern for Compliance with Legal Requirements
- * Concern for the Need for Pest Management, and
- * Suggested Alternative Programs.

A copy of this summary of scoping responses may be requested from:

Wayne G. McCully
Texas Transportation Institute
The Texas A&M University System
College Station, Texas 77843-3135
(409) 845-8539

ISSUES RAISED IN SCOPING RESPONSES

Concern for Human Health and Safety

Exposure to Pesticides

- * Evaluate public exposure to pesticides from various modes of use, including such variables as frequency and method of application, formulations used, and application rates.
- * Consider the exposure of the traveling public to spray operations and applied materials.
- * Evaluate the exposure of TxDOT workers to pesticides.
- * Consider actual toxicity studies of subtle immune and neurological factors at low exposure levels, instead of mathematically extrapolated figures of exposure effects at higher exposure levels, for more realistic data regarding chemical toxicity to humans.

- * Evaluate application techniques, applicator training programs, public notification programs, and the use of various pesticide formulations which may minimize public exposure.

Pesticide Toxicity

- * Evaluate the acute and chronic toxicity of pesticides, their inert ingredients and adjuvants, as well as possible interactive, cumulative, and synergistic effects.
- * Evaluate toxicity to chemically sensitive populations such as infants and children, pregnant women, elderly persons, and those with chronic illnesses.

Data Adequacy

- * Request disclosure of full formulation of pesticides from chemical companies.
- * Consider reliability of data regarding pesticide risks, including data gaps and the results of questionable labs or methodologies.

Concern for Vegetation

- * Evaluate the extent of damage to nontarget vegetation, including threatened or endangered species, as well as biodiversity reduction caused by the use of pesticides.
- * Evaluate the beneficial pollutant-filtering characteristics of roadside vegetation.

Concern for Water and Aquatic Resource Quality

General Impacts

- * Consider impacts on current and potential supplies of drinking water.
- * Evaluate the spread of pesticide residues through the use of contaminated water for irrigation purposes.
- * Evaluate potential of pesticide-contaminated runoff from highway ROWs to contaminate surface and ground water supplies.
- * Evaluate current TxDOT application rates for potential contamination of stormwater runoff.

- * Evaluate the use of vegetation to filter pollutants from runoff, thereby preventing or reducing the contamination of surface and ground water supplies.

Surface Water Impacts

- * Evaluate the impact of pesticide use on surface water supplies.
- * Consider the impacts of variation in soils, vegetation, drainage, and weather conditions in different parts of the state on pesticide drift into and persistence in surface waters.
- * Evaluate methods to prevent pesticides from entering surface waters.
- * Evaluate impacts of pesticide-contaminated water on fish and wildlife species, including threatened or endangered species.
- * Evaluate the risk of pesticide-contaminated water in wetlands and aquatic habitats intersected by highways.

Ground Water Impacts

- * Evaluate the impact of pesticide use on ground water supplies.
- * Consider the impacts of variation in soils, vegetation, drainage, aquifer location and permeability, and weather conditions in different parts of the state on pesticide leaching and persistence in ground waters.
- * Evaluate methods designed to prevent pesticides from entering ground water.
- * Evaluate the leaching potential of the full formulation of each pesticide.

Concern for Soil Quality

Pesticide Mobility

- * Evaluate the impacts of variation in soils, vegetation, drainage, and weather conditions around the state on pesticide movement and persistence in soils.
- * Consider pesticide breakdown rates from field studies instead of laboratory studies for more realistic representations.
- * Evaluate the leaching potential and related aquifer contamination potential for the full formulation of each pesticide.

Pesticide-Related Erosion

- * Evaluate the increased soil erosion and siltation of streams resulting from the elimination of vegetation in and around drainage channels and other drainage areas.

Concern for Air Quality

- * Evaluate impacts on air quality from pesticide use including such effects as airborne spray drift and volatilization.

Concern for Fish and Wildlife

- * Evaluate the impacts of pesticide use on, and toxicity to, nontarget wildlife species, including threatened and endangered species.
- * Evaluate the use of application techniques which minimize the exposure of these species and habitats to pesticides.
- * Evaluate the spread of pesticide residues through feces of wildlife species which forage in highway ROW.

Concern for Visual Quality

- * Evaluate the impacts of pesticide use on the wildflowers growing along highway ROWs.
- * Consider the appearance of herbicide-induced bare soil conditions in highway ROWs.

Concern for Calculation of Total Cost per Method

Pesticide Cost

- * Include the cost of monitoring for contamination of ROWs, drainage channels, streams, and pesticide storage and formulation areas.
- * Include the cost of public notification prior to pesticide applications.

- * Include the cost of application downtime caused by inclement weather such as high winds or impending precipitation.
- * Include the cost of rising applicator insurance rates.
- * Include the cost of liability trespass suits for health and property damage.
- * Include the cost of a contamination clean-up fund.
- * Consider costs difficult to measure in dollars, such as environmental harm, the death of a nontarget species member, and the health costs, personal suffering, and job absenteeism due to worker or public exposure to pesticides.

Alternative Method Cost

- * Consider the potential benefit of job creation should the use of manual or mechanical methods be increased.

Concern for Compliance with Legal Requirements

- * Evaluate compliance with the EPA's Endangered Species Protection Program.
- * Evaluate compliance with the rules and regulations established by the Texas Department of Agriculture regarding pesticide use.
- * Coordinate the use of pesticides on the state highway system with the National Park Service's restrictions on the use of certain pesticides within park boundaries.

Concern for the Need for Pest Management

- * Describe the need for pest management along highway ROWs.

Suggested Alternative Programs

Modified Chemical Alternatives

- * Evaluate pesticide use patterns which vary from the traditional, such as reduced application rates or one-time spot applications followed by the planting or seeding of desirable vegetation.

- * Evaluate the proposed removal of certain pesticides from the list of acceptable products for pest management for reasons of toxicity or contamination.
- * Consider the use of pesticides with modes of action considered less environmentally disruptive than is typical, such as hormone mimics, which are specific to a pest species.
- * Evaluate the use of pesticides only where other methods are not feasible.
- * Evaluate the option of using selective pesticides only.
- * Evaluate the implementation of action levels at which point vegetation will be reduced or removed, versus a zero-tolerance stance on weed species.
- * Evaluate the implementation of design and construction techniques which minimize the need for pesticide use along highway ROWs.
- * Evaluate current mitigation measures related to TxDOT's pesticide use along the roadways and recommend additional measures if warranted.

Nonchemical Alternatives

- * Evaluate the implementation of integrated pest management (IPM) techniques.
- * Evaluate the option of increased use of mechanical methods of control.
- * Evaluate the option of increased use of manual methods of control.
- * Evaluate the implementation of owner-will-maintain agreements.
- * Evaluate the increased use of biological controls such as the planting of native rhizomatous grasses, which require no mowing, to inhibit the growth of woody species.
- * Evaluate methods which do not create the bare soil conditions which allow weeds to colonize effectively.
- * Evaluate the no-treatment alternative.
- * Evaluate design and construction techniques which reduce or eliminate the need for herbicides.
- * Evaluate the possibility that other TxDOT programs are inadvertently aggravating the need for vegetation management.

- * Evaluate techniques which maintain vegetative cover along the roadways to filter pollutants.
- * Evaluate regional differences and the need for site-specific pest management policies.

ISSUES RAISED WHICH WILL NOT BE ADDRESSED IN THE EIS

To the extent possible, the EIS will address the issues raised in this scoping document, with two exceptions.

First, the EIS is not concerned with every element in each pesticide's profile. A pesticide's profile is a system of interconnecting elements beginning with the manufacture of a compound and including packaging, storage, transport, application, environmental fate, and neutralization of residues in equipment or containers. The Environmental Protection Agency, together with other federal and state agencies, is responsible for regulating all elements of a pesticide's profile, from its registration requirements to the environmental consequences of its use. TxDOT, however, serves no regulatory function.

TxDOT's responsibility begins with the purchase and delivery of a pesticide material from a supplier. Those impacts of a pesticide's profile which precede its purchase and use by TxDOT in pest management have, at best, an indirect bearing on the program. It is reasonable to believe that these antecedent profile impacts would be the same even in the absence of a TxDOT pest management program.

Second, it is beyond the scope of this EIS to assess cumulative and synergistic public health impacts of all pesticides and pollutants to which humans are exposed in everyday living. Such scenarios concerning exposure to all possible toxicants are outside TxDOT's responsibility. It should be noted as well that these studies would be extremely difficult to quantify and interpret.

LIST OF RESPONDENTS

Written comments were received during the scoping process from the following individuals, citizens' groups, and governmental agencies. A copy of the draft EIS will be mailed directly to each entity listed.

Individuals and Citizens' Groups

Jane Foster, San Antonio Conservation Society, San Antonio, Texas
Marilynn M. Kish, Austin Regional Group, Sierra Club, Austin, Texas
Robert H. McIntyre, Fort Davis, Texas
E. M. T. O'Nan de Iglesias, Protect All Children's Environment, Marble Falls, Texas

Susan Pitman, The Chemical Connection, Wimberley, Texas
Scott Royder, Lone Star Chapter, Sierra Club, Austin, Texas
James C. Scott, Public Citizen, Austin, Texas
Brigid Shea, Clean Water Action, Austin, Texas

Governmental Agencies

National Park Service, Southwest Region, Santa Fe, New Mexico
Texas Forest Service, College Station, Texas
Texas Water Commission, Austin, Texas
Texas Parks and Wildlife Department, Austin, Texas
U.S. Army Corps of Engineers, Southwestern Division, Dallas, Texas
U.S. Fish and Wildlife Service, Region 2, Albuquerque, New Mexico
U.S. Forest Service, Washington Office, Washington, D.C.
U.S. Forest Service, Regional Office, Atlanta, Georgia

Treatment Area or Pest Plant	Season	Type of Herbicide	Application Rate & Mixture	Nozzle Tip or Boom	Comments
Surfaced Shoulders & Paved Medians	Mar-Oct	Roundup	3 qt./acre	8008	May be sprayed near trees or desired shrubs.
Pavement Edge & Curbs	Nov-Dec	Velpar L	4 gal./100 gal. water	6508	<i>Do not</i> use within 100 feet of trees or desirable shrubs. <i>Do not</i> use in picnic or rest areas.
	Mar-Oct	Roundup	3 qt./acre	6508	May be sprayed near trees or desired shrubs.
Guardrail, Sign Posts, Delineator Posts, Rip-Rap	Nov-Dec	Velpar L	4 gal./100 gal. water	2-OC08's 2508	<i>Do not</i> use within 100 feet of trees or desirable shrubs. <i>Do not</i> use in picnic or rest areas.
	Mar-Oct	Roundup	3 qt./acre (Comp.)* ½ qt./acre (Part.)*	6508 2508	May be sprayed near trees or desired shrubs. <i>Do not</i> spray on foliage of ornamentals.
	Year Round	Roundup + Oust	½ qt. + 2 oz./acre (Part.)*	2508	
Tall Johnsongrass	May-Oct	Roundup	½ qt./acre	OC40 or OC80 6508 or 2508	<i>Do not</i> spray in windy conditions.
	June-July	Roundup + Oust	½ qt. + 2 oz./acre	Flex-5, W-4 Boom, or same as for Roundup alone	Avoid ornamental plants. <i>Do not</i> allow spray to drift onto nearby crops.
Tall Grass and Weeds	May-Oct	Roundup	5 gal./10 gal. water	Ropewick	<i>Do not</i> treat when weed foliage is wet. <i>Do not</i> allow leakage from ropes over desirable grasses. Travel 2 - 3 mph in thick stands; 4 - 6 mph in thin stands.
Wildoat and Jointed Goatgrass	Late March	Roundup	1 qt./acre	Flex-5 or W-4 Boom	May be sprayed near trees or desirable shrubs.
Brush Species near Bridges and Fences	Apr-Oct	Velpar L	4 ml./inch of stem diameter 4 gal./100 gal. water	Spotgun Handgun 8008	<i>Do not</i> use in picnic or rest areas. <i>Do not</i> use within 100 feet of trees or desirable shrubs. Spray around base of brush or trees to kill.
Grass and Weeds at Stockpiles	Mar-Oct	Velpar L	4 gal./100 gal. water	8008	<i>Do not</i> use within 100 feet of trees or desirable shrubs.
Aquatic Areas (Standing or Running Water)	May-Oct	Rodeo	6 qt./100 gal water	Handgun 8008	Same precautions as for Roundup.
Field Bindweed	Apr-Sept	Escort	1 oz./acre	Flex-5 or W-4 Boom	Spray only when plant is in full bloom
African Rue	Apr-Nov	Escort	3 oz./acre	Flex-5 or W-4 Boom	Spray only when plant is actively growing.
Huisache	June-July	Escort	2 oz./acre	Flex-5 or W-4 Boom	<i>Do not</i> spray after July 31.

* Comp. = Complete Vegetation Control
* Part. = Partial Vegetation Control

Table 1. Schedule of Herbicide Use in TxDOT's Pest Management Program
(From TxDOT's *Vegetation Management Standards*, p. 3-12, 8/91)