

June 1991

EPA toughens hazmat rules

By Larry Mendenhall
Editor, *Technology News*

For years, vehicle maintenance shops have been disposing of used oil filters, shop rags, and floor dry by simply dumping the waste in the garbage. That practice now carries a potentially crippling fine since new Environmental Protection Agency (EPA) regulations may classify these and other common shop wastes as hazardous materials.

Those common items are now subject to a new test, the Toxicity Characteristic Leaching Procedure (TCLP), that went into effect March 26, 1991. It added benzene and 24 other materials to the EPA's original list of 14 toxic substances. These additions dramatically expand the list of wastes considered hazardous. For example, any waste material would be considered hazardous if the TCLP test measured more than .5 milligrams per liter of benzene or more than 5 milligrams per liter of lead. If these limits are exceeded, then disposal through a commercial hazardous waste company would be necessary.

Many city, county, and

state equipment maintenance shops generate waste containing substances on this list. Failure to follow EPA's disposal guidelines can bring a maximum fine of \$25,000 per day per violation. The prospect of being fined highlights the importance of re-examining the waste streams generated by public equipment and maintenance shops.

"Government garages may think they're exempt, but they're not," warned Kim Gunderson, an environmental specialist for the Iowa Waste Reduction Center at the University of Northern Iowa. "The EPA regulates everyone, even Department of Defense operations like military bases."

The TCLP is a part of the Resource Conservation and Recovery Act (RCRA) passed in 1976. Amendments to the bill were passed in 1980 and 1984. The 1984 amendments required small generators of hazardous waste (those businesses or agencies that produce between

220 and 2,200 pounds of hazardous waste per calendar month) to comply with hazardous waste regulations. Previously, only large generators of hazardous waste (over 2,200 pounds per calendar month) were obliged to comply.

The EPA estimates that there are about 100,000 businesses and governmental agencies in the small generator category. Some of the requirements are:

1. to obtain an EPA identification number for each site where waste is generated
2. to use a fully completed manifest when shipping waste offsite.
3. to use only hazardous waste transporters and authorized facilities with EPA identification numbers to transport, treat, store, or dispose of hazardous wastes
4. to not store hazardous waste on site for longer than 180 days without a permit.

Agencies and businesses are responsible under RCRA regulations to determine if the waste they gen-

Inside pages

2 Early highway research may have lacked computer animation, but it still helped Iowans travel their new highways safely.

4 A revamped Accident Location and Analysis System reduces the time it takes to receive a report and makes it easier to read.

6 Keep in step with safety in "Tips From The Field."

continued on
page 3

Early research effective, not fancy

With the advent of the automobile in the early 1900s, and its popularity and proliferation in the 1920s and 1930s, came accidents.

Past Roads

By Dr. Stanley Ring
Professor Emeritus of
Civil Engineering

It was soon apparent that motorists needed protection from themselves. The early roads had many "built-in" hazards; for example, steep banks with drop offs and exposed bridge abutments were common.

The earliest guard rails were wood fences and, later, steel cables anchored at the ends. After World War I the Iowa State Highway Commission received a number of surplus army trucks. These were used to determine the effectiveness of guard rails. In Photo 1, one of these trucks is being driven into the cable guard rail and in Photo 2, Commission engineers assess the damage.

Here we see one of the earliest examples of research on highways. Not as high-tech as some of today's studies but the results might very well be the same.

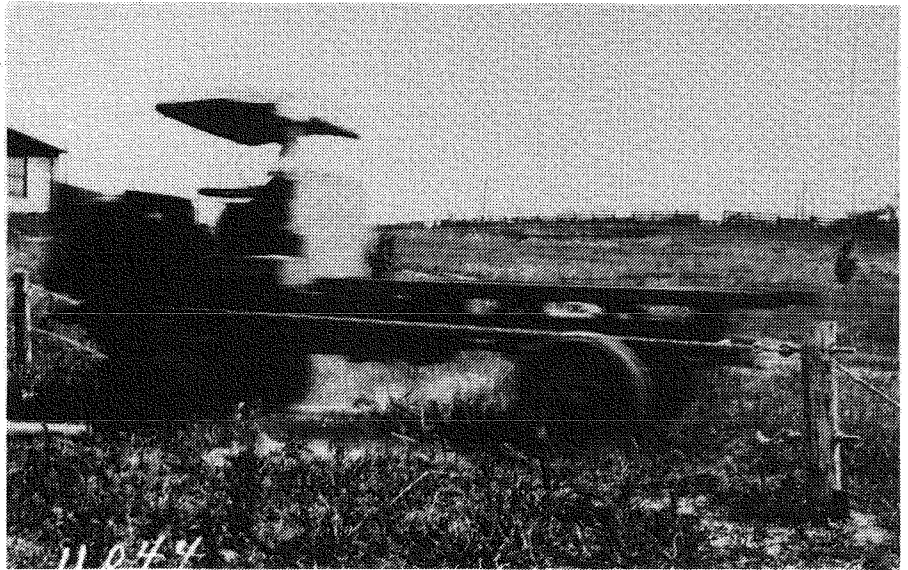


Photo 1



Photo 2

Technology News is published by the Iowa Transportation Center, Iowa State University, University Extension, 194 Town Engineering, Ames, Iowa 50011 Phone: 515/294-5642 Fax: 515/294-8216

Program Manager — Tom Maze; Assistant Program Manager — Jan Graham; Safety Circuit Rider — Ed Bigelow; Communication Specialist — Larry Mendenhall; Program Coordinator — John Moody; Secretary — Diane Love; Office Assistant — Cassie May

The preparation of this newsletter was financed through the Technology Transfer (T²) Program. The T² Program is a nationwide effort financed jointly by the Federal Highway Administration and the Iowa Department of Transportation. Its purpose is to translate into understandable terms the latest state-of-the-art technologies in the areas of roads, bridges, and public transportation.

The opinions, findings, or recommendations expressed here are those of the Iowa Transportation Center and do not necessarily reflect the views of the Federal Highway Administration or the Iowa Department of Transportation.



IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Hazardous waste changes continued from page 1

erate is hazardous. The first step in doing this is to check the EPA's hazardous waste list. If the waste does not appear, but may contain hazardous substances it has to be checked, usually by an outside laboratory, to see if it contains any one of four hazardous waste characteristics. A waste is considered hazardous if it is ignitable, corrosive, toxic (i.e., TCLP), or reactive.

Vehicle maintenance shops generate several types of waste that, under these new, regulations are hazardous. These hazardous materials may be generated by heavy metal-based paint wastes, ignitable wastes such as shop rags, and spent solvents.

Jim Olson, a waste management specialist with the Iowa Waste Reduction Center, estimates that the nearly six million vehicle oil filters disposed of each year in Iowa may produce as much as 400,000 gallons of waste oil that may potentially enter the environment.

"Even though used oil is not on the EPA's list of hazardous wastes as long as it is recycled, the exclusion does not extend to oil-contaminated wastes such as oil filters, floor dry, or shop rags," he said.

Waste minimization is one goal of the RCRA regulations. It recognizes that hazardous waste problems cannot

be completely solved by effective waste treatment prior to land disposal. Waste minimization focuses on reducing or recycling wastes so that the amount and toxicity of hazardous wastes are minimized.

Waste minimization saves money by using resources more efficiently and reducing the disposal costs. With public environmental concern at an all time high it also has a good public relations value. A well-publicized waste reduction program is likely to be well received by the public.

The Iowa Waste Reduction Center suggests several ways to reduce waste in vehicle maintenance shops.

Reduce spillage Examine how spills occur in the first place. If spills happen consistently during a process, or when using a particular machine, or by one person, see what steps can be taken to change current practices to prevent future spills.

Change cleanup methods Floor dry is commonly used to absorb oil spills. Under the new TCLP parameters used floor dry now may be a hazardous waste. Eliminate the floor dry by using absorbent socks or pads; even a mop and bucket will work. Used oil collected for recycling or used in a heater for energy recovery is not a hazardous waste. Used solvent may also be a hazardous waste. Consider

different methods for cleaning parts such as hot soap cleaners. This eliminates solvent waste. Used oil filters are another common shop item potentially classified as a hazardous waste. They can, however, be recycled. The filters can be crushed or drained to remove excess oil that can be recycled and the remaining metal can be recycled as scrap.

Reclamation The best way to eliminate oily rags as a hazardous waste is to hire a commercial laundry service to provide clean towels. The service picks up soiled towels which eliminates the need for proper hazardous waste disposal. Another advantage is that such services are already used in many shops.

The Iowa Waste Reduction Center is an ideal place for any agency that has questions about reducing waste volumes and complying with the new regulations. The phone number is 319/273-2079. The Iowa Department of Natural Resources, Air Quality and Solid Waste Protection Bureau (515/281-8690) and the Center for Industrial Research and Service (515/294-3420) have waste minimization programs.

In addition, in cooperation with the Iowa Waste Reduction Center, the Iowa Transportation Center will be presenting workshops on "Garage Waste Reduction" in the fall of 1991.

Safety main concern of *Tech News* readers

Safety, management, and maintenance are on the minds of *Technology News* readers as indicated by the Iowa Transportation Center's most recent survey.

The ITC survey is included in *Technology News* newsletter once a year. It is the ITC's best way of getting feedback from street and highway agencies which it serves. The next survey will appear this fall.

Overall, safety was checked most often as the subject of greatest interest to *Tech News* readers. Consequently, two possible future programs — safety features for local roads and

continued on page 6

PC-ALAS generates better reports

By Mary Rose Anderson

New features and a faster turn around time is making the Iowa Department of Transportation's Accident Location and Analysis System (ALAS) a more valuable tool in improving traffic safety in Iowa.

IDOT's Bureau of Transportation Safety formerly used a mainframe computer to generate an accident location report for local agencies in Iowa. Typing data into the accident database was a time-consuming task and the reports it generated were difficult to understand. Generating a report was "a miserable thing to do," according to Safety Program Administrator Joyce Emery. The desktop version, called PC-ALAS and written by Scott Moreland, reduces the time that it takes to generate a report, provides more detailed information and is easier to understand.

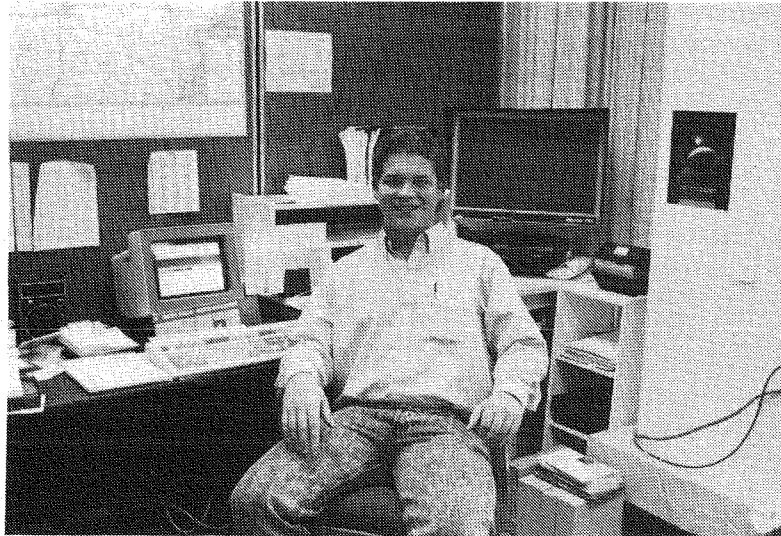
"Scott didn't just convert it. He learned what it needed to do and rewrote it completely," Emery said. "We compared his version to the old one and every time there was a discrepancy his version was correct."

Moreland's version adds features that the mainframe program lacks. PC-ALAS provides more summarized statistics and can access an accident location by mile post. It also prints out a schematic of a location.

"You can scan the schematic really fast and see if the accidents bunch up in one location," Emery said.

"Then you can look at the case-by-case summary and look for any similarities in the accidents."

The only advantage the mainframe version retains is that it can generate a 10-year accident report of any location. PC-ALAS can generate only five-year histories at the present time.



Scott Moreland, author of PC-ALAS

"There's still a couple of circumstances that require a 10-year history. An example of that is when county engineers want to get approval for a design exception. That still requires a 10-year check. Of course, we'll try to add that capability to the PC-ALAS version as well," Emery said.

PC-ALAS is so easy to use that the Bureau is working to make it available for any agency that wants to generate its own reports. Emery rec-

ommends, however, that unless an agency needs to generate more than a dozen or so reports a year that it is still faster to ask her office to provide the report. Regardless of where they are produced, the reports provide accident analysis for any node, intersection, link, node string, route number, or mile post for any local government agency. All accident reports submitted to the IDOT are in the database if they involve one or more motor vehicles and result in death, personal injury, or property damage of at least \$500.

"Presently, 14 city, county, and DOT field offices are producing their own accident analysis reports by using PC-ALAS software," Emery said. "Hopefully all of the large counties and cities will have their own software someday. It's very user-friendly. The databases are simply mailed out on 5 1/4" or 3 1/2" diskettes when setting up remote users. Every year we'll just send them the last

annual accident data for their jurisdiction which will let them keep their own local files."

PC-ALAS provides local agencies with complete accident statistics regarding fatalities, injuries, and property-damage-only accidents. These statistics are available for all investigated and driver-reported accidents on any road system. Government agencies in many other states have been limited to accident location information only on primary roads. Information provided by Iowa's ALAS

program is a vital part of decision-making processes on all levels; for engineers designing road improvements; county and city law enforcers designating enforcement "beats;" and even local governing bodies considering planning and zoning issues.

Utilizing this information can save Iowans millions of dollars each year by reducing traffic accidents. Ed Bigelow, the Iowa Transportation Center's Safety Circuit Rider, says accidents cost Iowans approximately \$800,000,000 yearly. He says accidents cost even the smallest of counties \$2 million yearly.

"The cost of traffic accidents to Iowa involves more than just property damage," Bigelow said. "The estimated expense of traffic accidents includes lots of things, like the cost of law enforcement, the cost of record keeping, medical treatment, property losses, time lost from work, and other accident-related costs. These related costs are figured into the equation for estimating the average cost of a vehicle accident."

The Safety Circuit Rider Program includes sessions presented by Bigelow on how to understand data from ALAS reports. This year he has given 39 workshops (for 43 cities and 36 counties all around the state) on how to utilize ALAS data. "What I have been doing is describing the computerized record system, how to use it, and how to read and analyze its reports," he said.

Emery and PC-ALAS program author Moreland are encouraging local officials capable of sharing localized databases to do so. "If the county sheriff needs information but the county engineer already has the soft-

ware, then we would encourage them to share. They're using the exact same database," said Moreland.

"The goal isn't just to set up jurisdictions with this software. It is to get them the information needed with the least amount of fussing as possible and use it for accident reduction purposes," said Emery. "That's the key to getting local authorities to utilize accident reports. It's got to be easy and convenient."

Bigelow encourages local agencies to use their accident analysis reports to try to reduce the number of accidents in their jurisdiction by five percent. Achieving such a goal state wide would result in an annual savings of \$40 million. He reasons that better, more accessible accident data can and should lead to better, more effective accident countermeasures.

"But to make the most of these statistical reports, a lot of personal knowledge of the roadways is needed," Bigelow said. "The reports filed usually don't list the design or construction of a street, road or highway as the reason for an accident. But the reports can be used to find patterns in accidents — which could indicate a need for road surface improvements, roadside improvements, or improvements to signs, delineators, or object markers."

"You see, once you know how to read the statistical reports — and know what the numbers mean — you really need the insight of officials with some personal experience with that particular site," he stressed. "For example, you may see from the report that the rate of accidents is three times higher at a given location

by day than by night. What does that mean? Maybe it's a school or business route. Or if the nighttime accidents are higher, maybe there is a bar nearby. Maybe the street lighting is poor there. Maybe this is an arterial highway or street where people tend to speed."

Moreland agrees with Bigelow. "When your report indicates a high rate of single car accidents, it doesn't always mean the answer to the problem is a matter of engineering. Sure, there may be a curve on an up or downgrade. But the site may also be near a ravine where a lot of deer are living. Or there could be an elderly housing complex next to the location. Or there may actually be drunk-driving accidents because there is a bar nearby."

The ALAS report that local agencies have been receiving for years is one of the best — and most neglected — methods of improving highway safety in Iowa. Being familiar with the road system and the ALAS or PC-ALAS reports, elected and appointed local officials, and agency staff should be able to improve their vicinity's traffic safety when making decisions regarding engineering and road design, selective law enforcement strategies, and planning and zoning policies. This will not only reduce the costs associated with traffic accidents but save lives and reduce injuries as well.

For more information on obtaining ALAS reports or the PC-ALAS software phone the Bureau of Transportation Safety at 515/239-1668. To schedule Ed Bigelow's safety programs, including how to effectively use ALAS report, call 515/294-6384 or 515/294-5642.

Tips From The Field

Marking steps make job safer

Not enough emphasis can be placed on safety in the work place. These photos illustrate two safe ways for an employee to climb into a dump truck bed.

Climbing into a truck bed is especially hazardous during winter when ice and snow may accumulate on the truck. But climbing surfaces may also become slippery at other times of the year, especially after heavy rains. Mud or wet leaves from clean-up work may also make climbing surfaces treacherous.

The City of Des Moines tackles this problem in two ways. Photo 1 shows a ladder is welded to the side of the truck; making an obvious route to the truck bed.

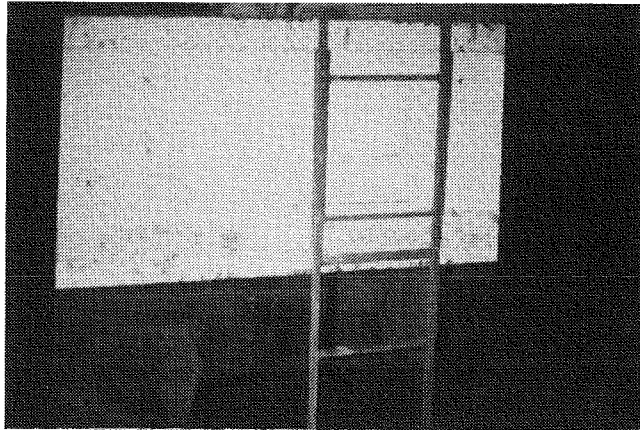


Photo 1



Photo 2

Photo 2 shows a dump box that has two painted stripes on top of the bed and the word "step" on the side giving the exact location of the dump truck's dual tires.

To make the climb even safer, a non-slip surface could be applied to both the ladder or where the employee is instructed to step. This can easily be done by painting the surface and sprinkling an abrasive substance such as silica sand on it. The sand provides perfect traction after the paint dries.

For more information, contact John Bellizzi, City of Des Moines Public Works Director, 216 SE 5th, Des Moines, Iowa 50309 or phone 515/283-4276.

Tech News survey continued from page 3

work zone safety — drew a lot of interest from readers.

After safety, county respondents were most interested in roadway maintenance, highway or bridge design, and bridge maintenance and rehabilitation. Municipal respondents were also very interested in roadway and equipment maintenance. Also rated high as topics of interest were management and computers.

The ITC is offering a two-day computer course August 21-22. It will introduce novice computer users to the operation of computers and to Lotus 1-2-3™. See "Conference Calendar" on page 8 for more information on registration.

Fifty-four percent of the respondents rated *Technology News* as very useful or useful. Transportation related workshops and conferences were also rated highly, 22 percent

rated them very useful and 25 percent as useful.

Survey results indicated increasing interest in off-campus programs. Over half of the survey respondents checked yes when asked if they would attend workshops if they were held closer to them. Forty-three percent said they were interested in programs like the ITC's Safety Circuit Rider that brings programs directly to the city or county.

For More Information

The videotapes and publications listed in this column are available on a loan basis by contacting John H. Moody, Iowa State University, Iowa Transportation Center, 194 Town Engineering, Ames, Iowa 50011 or by calling 515/294-9481 Monday, Wednesday, and Friday mornings.

Open Roads: A Look at Freeway Incident Management This videotape presents the current freeway incident management practice and is intended for viewing by top level management, elected officials, citizen groups, and other interested parties. Through an effective mix of animation, special effects, interviews, and real-world video footage, this program dramatically depicts the severity of the incident problem and offers effective and practical solutions. **Running time: 20 minutes, Request #229V**

Everything to Lose This videotape produced by the Caterpillar Tractor Company discusses safety in the workplace. The importance of safety equipment is outlined. The impor-

tance of following safe procedures is stressed. **Running time: 21 minutes, Request #120V**

Midwest Asphalt Rubber Project This videotape reviews the method of employing used automobile and equipment tires by shredding them and adding them to asphalt cement to be using in highway paving projects. The result is a more flexible and longer-lasting pavement. **Running Time: nine minutes, Request #197V**

NACE Action Guide Volume III-4-Safety Improvements This is a 30-page update (replacement date 1990) for Volume III-4 of the previously published (1986) NACE Action Guide Volume III-4 which deals with safety as it relates to sight distance, vertical curves, horizontal curves, intersection configuration, restrictive widths, and other obstructions on highways. **Request #739**

A Guide to Wetland Functional Design The information presented in this 222-page manual is intended as a starting point in wetland functional replacement mitigation. In as much

as this is a conceptual guide, the information should be augmented with site specific and project specific design information. **Request #732**

Program Guide — Utility Adjustments and Accommodation on Federal Aid Highway Projects This 54-page manual was developed as a program guide to assist individuals administering federal aid highway programs which involve (1) use of federal aid highway funds for the relocation and adjustment of utility facilities, and (2) accommodation of utility facilities and private lines on the right-of-way of federal aid highway projects. This is the second edition of the guide. It supersedes the original document dated June 1986. **Request #733**

And justice for all

Appointment, promotion, admission, and programs of extension at Iowa State University are administered to all without regard to race, color, creed, sex, national origin, disability, or age. Call the Affirmative Action Office at 515/294-7612 to report discrimination.

Publication order form

To obtain the materials listed from the ITC, return this form to the Iowa Transportation Center, Iowa State University, University Extension, 194 Town Engineering, Ames, IA, 50011.

Name _____	Title _____	Index No. _____	No. of Copies _____
Address _____	_____	_____	_____
City/state/zip _____	_____	_____	_____
Phone (____) _____	_____	_____	_____

Please send a complete listing of all publications from your office.

Please send a complete listing of all audio visual materials available.

Conference Calendar

Tri-State American Public Works Conference July 17-19, Davenport, Iowa Contact Larry Johnson, McClure Engineering 309/9350.

Transportation Impacts of the Clean Air Act: Mobile Source Emissions and Alternative Fuels July 25-26, Des Moines, Marriott Hotel This national conference will provide fleet operators, public works directors, transit operators, motor carriers, and state and local policy makers with insight into the emission standards of the 1990 Clean Air Act, and alternative fuels and engines which meet these standards. There will be both policy and technology sessions. Fuels under discussion will include LNG, CNG, methanol, LPG, electricity, and petroleum. Call 515/294-5366 to register or 515/294-7164 for more information on the conference's content.

American Public Works Association International Congress August 24-29, San

Francisco, California For more information contact APWA 312/667-2200.

Elderly Mobility: Roadways to the Future September 26-27, Kansas City, Missouri, Airport Hilton As the average age of America's population increases, the problem of providing mobility for elderly citizens is a growing problem. For many rural counties in the Midwest, the population over 75 years of age is the fastest growing segment. The declining driving skills of the elderly present a particularly acute predicament. The conference will discuss many issues related to problems associated with elderly mobility. To register for this conference contact 515/294-4817 and for more information on the conference's content contact 515/294-3781.

Traffic Safety - Using Your New Roadside Design Guide July 25, Scheman Building, Iowa State

University and October 10, Cedar Rapids, Sheraton Hotel This workshop covers the 1988 AASHTO "Roadside Design Guide" and its role in roadside safety. This course is specifically designed for local governmental highway managers and engineers. Call 515/294-6229 to register for the workshop or for information on workshop content call 515/294-6384.

Introduction to Personal Computers and Introduction to Lotus August 21-22, Iowa State University These two introductory classes are designed with the beginning computer user in mind. Each class participant will work through exercises on a computer terminal. For this reason class size is restricted. Participants need not attend both workshops. To register, contact Connie Middleton at 515/294-6223.

P124-0532

Technology News

Iowa State University
University Extension
Iowa Transportation Center
194 Town Engineering
Ames, Iowa, 50011

Do Not Forward-
Address Correction
Requested
Return Postage
Guaranteed

Route To: