

in its infancy, especially with the delays in random testing implementation. There are, however, some lessons emerging. Some of the issues being explored and evaluated include: redefinition of safety- or security-sensitive positions; adjustments to the random testing rates; adjustments to the testing cut-off levels for screening and confirmatory testing; modifications to procedures aimed at protecting the integrity of the specimen; and the role of third-party providers of drug testing services.

Employer and employee acceptance of the drug testing programs has been much better than originally projected. Positive impact on transportation safety, increased productivity, reduced absenteeism, and workplace morale have not been quantified as yet. However, significant benefits are anticipated. The DOT regulations have served as models for state legislation on workplace drug testing, private sector non-regulated employer drug testing programs, and anti-drug initiatives in other Federal agencies.

In conclusion, the DOT drug testing regulations represent a comprehensive drug demand reduction initiative in a significant segment of the US workplace -- the transportation industries. The overall impetus for such an initiative is improved safety for the public in transportation. An expected benefit is the early identification of drug users, and their referral for appropriate assistance, and the prevention of drug use by entering and incumbent workers in the transportation industries.

Recent legislation passed by Congress as part of the DOT 1991 Appropriations Act will result in further expansion of the DOT workplace testing programs. Title V, Omnibus Transportation Employee Testing, of the statute mandates alcohol and drug testing in the aviation, railroad, highway, and mass transit industries. It further expands testing requirements from the current intrastate operation of commercial motor vehicles. The DOT will issue regulations requiring alcohol testing in the six regulated transportation industries and drug testing in mass transit and intrastate commercial motor vehicle operations.

REDUCING SUBSTANCE ABUSE IN THE RAILROAD INDUSTRY: A SUCCESS STORY

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INTRODUCTION

The Federal Railroad Administration administers a broad-based set of regulatory substance abuse

countermeasures developed through extensive rulemaking during the mid-1980s. This has resulted in the first truly integrated alcohol and drug rule issued by a Federal agency that took advantage of both contemporary chemical testing technology and research with respect to occupational substance abuse developments. Regulations are codified in 49 CFR Part 219.

The regulations bar covered railroad employees (operating employees, dispatchers and train order operators, and signal and train control employees) from going or remaining on duty while using, possessing or being under the influence of or impaired by alcohol or controlled substances. Like other DOT regulations, the FRA rule contains a .04% per se standard for alcohol. Use of controlled substances on or off duty is expressly proscribed, except upon authority of a medical practitioner who has been advised of the employee's safety-sensitive duties. Pre-employment drug testing and post-accident alcohol/drug testing are required. Railroads are authorized to conduct breath alcohol and/or urine drug testing for reasonable suspicion, after unsafe practices, and after lesser-magnitude accidents/incidents for which the employee is believed to be responsible.

Railroads must maintain employee assistance policies under which employees troubled by substance abuse are referred for assistance and returned to work on the recommendation of the substance abuse professional who provides case management for the railroad. On-duty "co-worker reports" also must result in a referral opportunity (in order to promote collective employee participation in compliance). These concepts were derived from preexisting railroad industry programs, which continue to exceed the regulatory floor.

Random drug testing was implemented in 1990. Testing programs are subject to FRA review and approval.

FRA has also provided strong support for "Operation Red Block," the peer prevention program which grew out of employee concern over substance abuse in the railroad industry. This movement symbolizes the principle that permanent behavioral change must result from a cultural transformation.

POST-ACCIDENT TOXICOLOGY

The FRA's post-accident testing program was upheld by the Supreme Court of the United States in the case of *Skinner v. Railway Labor Executives' Association* (March 1989) against a challenge based on the Fourth Amendment to the Constitution. It is the only Federally-mandated Department of Transportation (DOT)

post-accident testing program which requires full toxicological analysis (i.e., blood, urine, and post-mortem tissues) within the context of transportation accident investigation. The agency utilizes a designated contract laboratory. The program was recently described in an article in the *Journal of Forensic Sciences* (September 1991), by David E. Moody, Ph.D., Associate Director, Center for Human Toxicology, University of Utah.

Full toxicological testing provides blood levels of drugs and metabolites detected, as well as urine data. The information is used in accident/incident investigations and also assists in identifying employees who present a risk, while adding to the overall deterrent effect of alcohol/drug countermeasures. Specific qualifying events which require post-accident testing include major train accidents, certain impact accidents, passenger train accidents with injuries, and employee fatalities in train incidents. Each of these criteria is defined with great specificity in the regulation.

PROGRAM RESULTS AND TRENDS

One of the barometers of success relative to FRA's alcohol and drug control program is the record compiled in post-accident toxicology. The program began in 1986; however, 1987 was the first full year of experience in which FRA exercised comprehensive quality control. Almost five full years of data are available for analysis.

Although the number of events and employees subject to the post-accident testing program is relatively small, the findings of the program are significant because they represent a fair portrayal of alcohol/drug involvement, or lack thereof, in virtually all of the major rail accidents each year. The number of events for which testing was conducted ranged from 179 in 1987 to 137 for the first 11 months of 1991. The total number of employees testing positive for alcohol or controlled substances ranged from 42 out of 770 tested (5.5%) in 1987 to 6 out of 477 tested (1.3%) during the first 11 months of 1991. With the exception of a slight increase in the positive rate to 6.0% in 1988, the decline in the positive rate has been steady for the 5-year period.

Over 60% of the positive findings have been for cannabinoids, with cocaine and ethanol also prominently represented. Polydrug findings have been relatively rare, particularly in the past two years of the program.

In about a third of the positive cases the use of alcohol or drugs was associated, in the view of the agency, with performance decrements contributing the accident. However, several alcohol or drug-caused accidents resulted in substantial harm to persons and damage to property, as documented in reports of the National Transportation Safety Board and FRA. As

positive rates declined over the 5-year period, so too did alcohol and drug involvement in fatalities, injuries and property damage. Data reported to FRA by the railroads corroborates the post-accident data. For-cause alcohol and drug tests conducted by employers also yielded declining positive rates, and random drug testing data for 1990 showed that only about 1% of employees were positive for a controlled substance tested.

LESSONS LEARNED AND FUTURE DIRECTIONS

Concerted application of a full range of countermeasures, coupled with bottom line verification through full forensic toxicology, can document the extent of alcohol and drug use in a regulated workplace and lead to a reduction in both incidence and accident losses. Disturbingly, alcohol and drugs tend to be more prominent in high damage, serious accidents than in the lesser reported accidents.

Integrating toxicological information as it relates to cause in accident investigation is difficult, but by no means impossible. The evaluator must avoid the confusion of mere correlation with causation. Where causation is suspected, appropriately qualified language should be employed. The degree of employee culpability in the incident, the interval between the accident and collection of specimens, levels of parent drug and metabolites detected, and appropriate pharmacokinetic and pharmacodynamic analysis must all be considered.

Constant attention must be paid to ensure that improved program results are not merely a reflection of drug abusers' adaptation to the testing program. For instance, the three cannabinoid positives detected in the post-accident program in 1991 all involved dilute urine specimens and would likely have resulted in cancelled or negative tests in a conventional occupational program. The FRA-designated laboratory screened the blood specimens, in one case identifying parent THC as well as an elevated metabolite level. Changes in drugs marketed for therapeutic use may also present significant challenges for drug detection technologies (e.g., low-dose benzodiazepines with very short plasma half-lives).

FRA continues to evaluate the alcohol/drug program as developments occur. For example, the agency periodically examines the drugs assayed, screening and cutoff levels and other aspects of the analytical protocol. In addition, FRA is presently analyzing the Omnibus Transportation Employee Testing Act of 1991 ("Hollings-Danforth") to determine the impact the legislation will have on the post-accident program.