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EVALUATION OF RADON MITIGATION SYSTEMS INSTALLED IN IOWA

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ABSTRACT

Radon mitigation systems installed in buildings by credentialed mitigators are subject to inspection by the Iowa Department of Public Health or its agent. Items of non-compliance with state law and rules or EPA Radon Mitigation Standards were noted on almost all systems. Records were researched to determine the level of non-compliance, the time required to resolve non-compliance issues, and to compare systems installed by credentialed resident mitigators to those installed by credentialed non-resident mitigators.

INTRODUCTION

The radon industry in Iowa has been regulated since the passage of Iowa Code Chapter 136B in 1988 and promulgation of Iowa Administrative Code Chapter 43 in 1988 and Chapter 44 in 1989. The law and rules require the certification of any person or organization that conducts radon testing or analysis for compensation and the credentialing of any person installing a radon mitigation system for compensation. In addition, the law and rules mandate annual inspection of records and practices of certified/credentialed persons. The annual inspections include evaluating between two and five radon mitigation systems installed per mitigator. However, if significant health and safety issues are discovered, all systems installed by that individual become subject to inspection.

This report examines items of non-compliance with EPA Radon Mitigation Standards observed in mitigation systems inspected between April 1, 1993, and March 31, 1994.

METHODOLOGY AND DATA USED

Data presented in this paper are derived from review of all radon systems inspected during the twelve month period ending March 31, 1994. Items of non-compliance were divided into two groups, "Minor" and "Serious," then subdivided into "In State" and "Out of State" to designate the address of the credentialed mitigators whose systems were inspected. Consistency of inspection process was carefully evaluated so that accurate comparisons could be drawn from one inspection report to another.

DISCUSSION

A total of 22 radon mitigation systems installed by nine different mitigators were inspected during the twelve month period ending March 31, 1994. One system was installed in a school building; the other 21 systems were in private homes. Permission to conduct the inspections and photograph each visible part of the mitigation system were obtained from the owner prior to each inspection. The inspection reports, photographs, and correspondence provided the basis for the evaluation of non-compliances. Two of the nine mitigators were based out of state and the remaining seven were based in Iowa.

Of the 22 systems inspected, four had no items of non-compliance. Two were installed by an in-state mitigator and two by an out-of-state mitigator. A total of 80 items of non-compliance were documented in the remaining 18 systems. These ranged from missing labels and failure to provide estimated operating costs to code violations in penetrations of firewalls and electrical wiring. Figure 1A indicates that 35 percent of the total non-compliances were a result of violations of standards by in-state mitigators while 65 percent were from out-of-state mitigators. While both out-of-state mitigators had systems inspected during the period under discussion, all the out-of-state mitigator non-compliances were from systems installed by only one of the mitigators.

The non-compliances were then divided into two categories as outlined in Figure 1B. The level of non-compliance severity for systems installed by the out-of-state mitigator were evenly divided between minor (32.5%) and serious (32.5%). Severity levels for systems installed by in-state mitigators weighted more heavily in the serious category (21.25%) compared to minor (13.75%).

The serious non-compliances were then evaluated as to specific issues as indicated in Figure 1C. The only two health and safety areas where in-state mitigators exceeded the number of violations noted from the out-of-state mitigator dealt with providing material safety data sheets (MSDS) on hazardous substances used during installations and one post-mitigation radon level that was not brought below 4.0 pCi/l. The out-of-state mitigator had a number of violations, exceeding the in-state mitigators, in health and safety areas related to: testing for backdrafting, failure to comply with code on penetrations through firewalls, failure to comply with code in electrical wiring or placement of fan, placement of discharge vent, and slope of pipe on a lateral run.

The correspondence relating to the inspections was evaluated to determine length of time required to resolve areas of non-compliance. As can be seen in Figure 1D, time frames from date of non-compliance letter to final resolution varied from a low of three days to 123 days. The readings below zero indicate that the resolution of the non-compliances on nine systems is incomplete. Eight of the systems, those with 383 days outstanding as of May 10, 1994, were installed by the out-of-state mitigator. The other system with 46 days outstanding involves a system that was installed prior to implementation of the 1991 EPA Radon Mitigation Standards. This system, which was inspected at the request of the homeowner, was evaluated based upon standards in effect at the time of installation. The average time it took to resolve non-compliances was 56.75 days, and median was 61.5 days. All systems are subject to reinspection either before or after resolution of non-compliances depending upon the level of severity of the violations. Approximately 83.3 percent of mitigators comply with the resolution process without undue delay.

It is apparent from some of the identified problems involved with mitigation systems installed by an out-of-state mitigator and the difficulties in resolving those problems that additional emphasis may need to be placed on establishing reciprocity agreements between states. The agreements would have to address issues related to initial credentialing, inspections, compliance, suspension or revocation of credentials, and requirements for continuing education and renewal of credentials.

Iowa Radon Control Program

Total Violations in Systems

April 93 – March 94

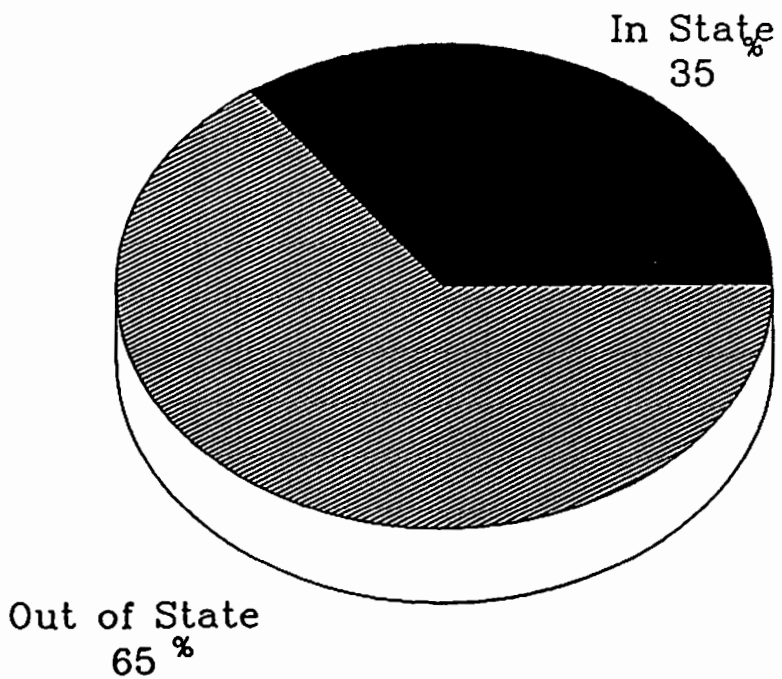

Fig 1A

Iowa Radon Control Program

Minor vs Serious Violations

April 93 - March 94

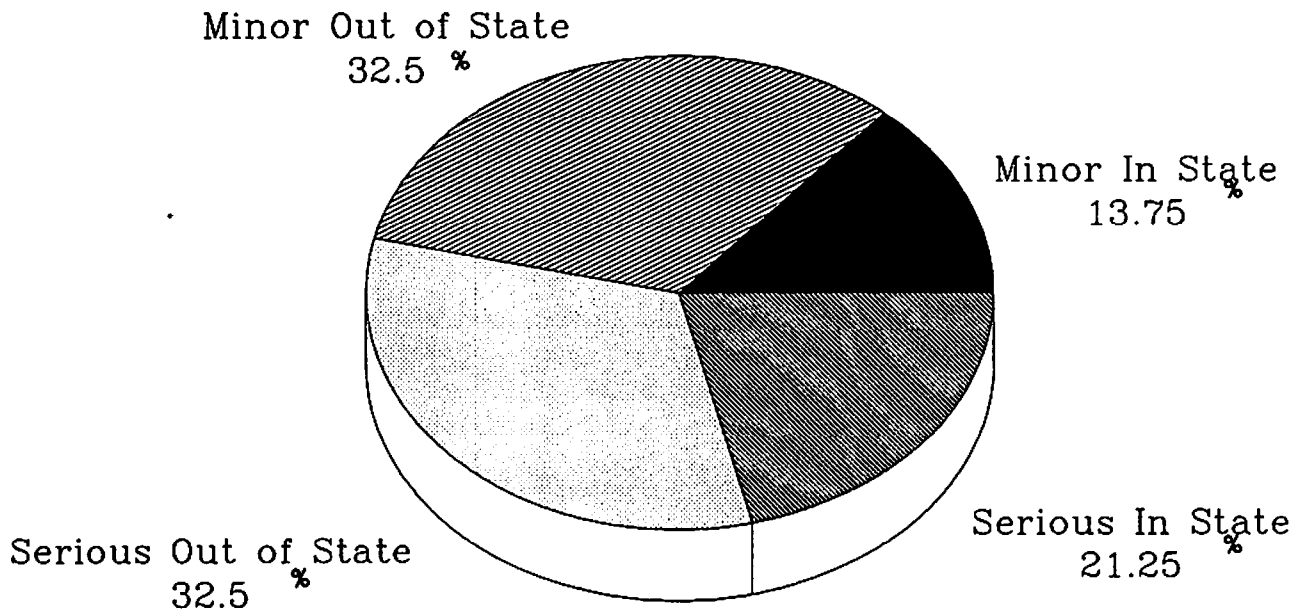

Fig 1B

Iowa Radon Control Program

Types of Serious Violations

April 93 - March 94

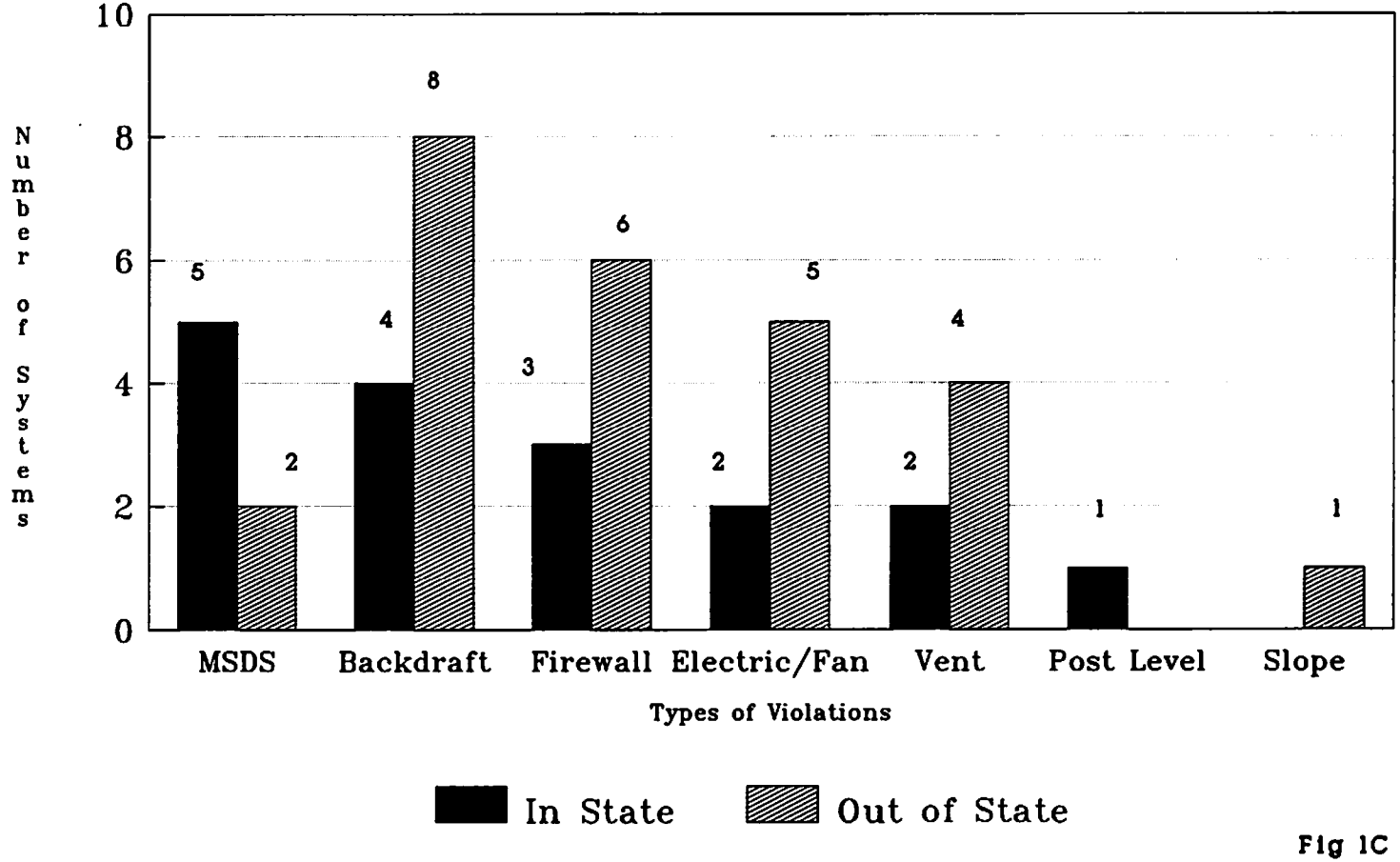

Fig 1C

Iowa Radon Control Program

Days to Resolve Non-Compliances

April 93 - March 94

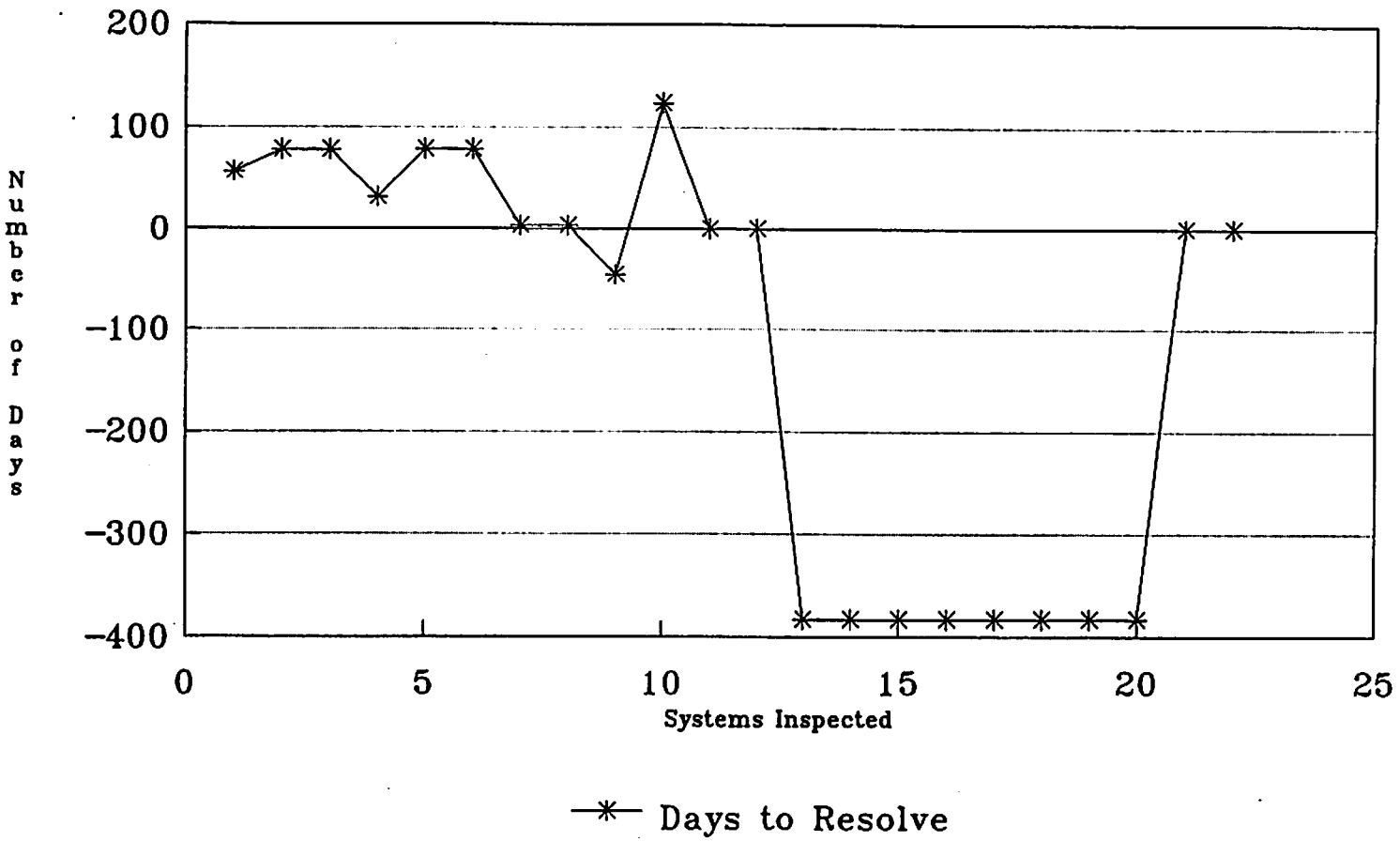

Fig 1D