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Subject: Green Alert: Automated Transient Combustible Inspection

Title: Automated Transient Combustible Inspection
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LESSONS LEARNED: The time required to conduct frequently performed inspections such as transient combustible inspections may be significantly reduced and the accuracy of the information collected during inspections may be improved by automating inspection forms on portable, hand-held computers.

DISCUSSION: Monthly transient combustible inspections are required for 710 areas in the Laboratory's 550,000 square foot Chemistry and Metallurgy Research facility. During the inspections, transient combustibles are categorized, counted, and converted to an equivalent weight of class A combustibles. To accomplish the inspections manually, an inspector had to walk down the entire facility and complete 582 separate inspection forms.

In addition to the room identification information recorded on each form, five entries are required per item: description, quantity, weight, class A factor, product. Each room contains an average of six items. After the four numerical entries are documented for each item, the sum of the products of all the items is calculated, and then the sum of the products is divided by the room area. Each form is then signed and dated. On average, it took an inspector 66 hours to perform the surveillance manually for the entire facility.

Approximately 65 forms or 11.2% of the 582 forms produced during the manual inspection contained errors. Errors were typically caused by transposed numbers, miscalculations, and missing data. During independent review of the inspection forms, an average of 30 forms containing errors were overlooked, or 46.2% of the 65 forms containing errors.

An automated inspection process using an Excel spreadsheet on a handheld computer was introduced to improve the inspection process. The room identification information for each of the 582 forms was recorded in the spreadsheet, and a list of typical combustibles was included with the associated description, quantity, weight, class A factor, and product information, which can now be entered onto a form by selecting the appropriate combustible material from the list. The required calculations were also automated. It takes approximately 29 hours for an inspector to perform the surveillance for the entire facility using the handheld computer, a reduction of 56% over the manual inspection process.

The automated process has been used twice since it was introduced. On average four forms or 0.7% of the 582 forms were found to have errors. All the errors were attributed to missing data. Automating the inspection process decreased the number of forms containing errors by 94%.

The facility plans to expand the use of the spreadsheet system to other surveillance and inspection processes, and system drawings will be incorporated for some types of equipment. For example, during fire protection system inspections, personnel will be able to select a component on a drawing and the required datasheet will be automatically generated.

ORIGINATOR: Los Alamos National Laboratory

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FOLLOW-UP ACTIONS: Information in this report is accurate to the best of our knowledge. As a means of measuring the effectiveness of this report, please contact the originator of significant action(s) taken as a result of this report or of any technical inaccuracies you find. Your feedback is appreciated.