

ABSTRACT OF THESIS

REDUCING UNCERTAINTY IN A QUALITATIVE EXPOSURE ASSESSMENT TOOL

An evaluation of factors influencing the risk characterization results from the Eastman Kodak Company's chemical assessment tool was conducted to determine which, if any, might have contributed to a high number of uncertain results and thus a high level of uncertainty (84% of activities assessed) requiring further effort to define exposure risks. Assessment criteria factors, such as health hazard and exposure potential information, were analyzed for 44 activities involving chemical use at the Kodak Colorado Division (KCD) site.

Once the evaluation was completed, the original assessment tool criteria were modified in an attempt to further define risks to ultimately reduce the number of uncertain risks and thus the overall uncertainty of the tool. The modified assessment results were compared to professional judgment. The risk factors targeted by the modified assessment model were: 1) engineering controls, 2) health hazard ratings, 3) duration and frequency, and 4) chemical and physical properties. The significant factors found to influence reclassification of risks by professional judgment were 1) effectiveness of engineering controls, 2) duration, 3) frequency, 3) health hazard rating, and 5) amount of chemical used in the activity.

It was found that many of the original assessments were conservative evaluations of risk as compared to professional judgment. The modified assessment model results closely matched the results of professional judgment reclassification. The overall goal of reducing the number of uncertain risk assessments was achieved.

Overall, there was indeed a significant reduction in the number of uncertain risks and as such use of the modified assessment model might reduce the amount of time and resources unnecessarily assigned to acceptable or low priority exposure risks. However, there were six assessments that were misclassified when comparing to professional judgment. An 86% agreement rate was still reached between the modified model and professional judgment, thus allowing for improved prioritization of exposure risks and a reduction in uncertain assessment results.

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