

An Engineer's Perspective of the Intervention Research Workshop

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As an engineer practicing in the area of engineering controls for the reduction of occupational exposures to hazardous agents, the Intervention Research Workshop studies appeared to be effective for the studied situations, yet the models may not be applicable across a wide range of intervention possibilities. A more generic model might be more appropriate, perhaps a business model. Dr. W. Edwards Deming has proposed a model for the production of goods and services. If we can view interventions as products which need to be sold to potential customers, perhaps this type of model would be more effective across a wide range of intervention strategies. © 1996 Wiley-Liss, Inc.*

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INTRODUCTION AND PERSPECTIVE

As an engineer at the National Institute for Occupational Safety and Health (NIOSH), Physical Sciences and Engineering, I appreciated the opportunity to attend the Intervention Research Workshop, and was pleased to see the attention that intervention research received. We researchers with the Engineering Control Technology Branch have been conducting our own form of intervention research for many years. Most of this work has focused on identifying a problem area, assessing the extent of the problem, and then proposing, implementing, and evaluating solutions. Over the years, we have had many successes, but there is a need for a more effective means of implementing our recommendations in the workplace. This is especially true in working with small businesses.

From an engineer's viewpoint, the Intervention Research Workshop seemed to have a decidedly medical/epidemiological perspective. The models presented tended to

be medical in nature and, based on the experiences of the Engineering Control Technology Branch researchers, too simple. There were many discussions on pre- and postevaluations, but few on how to effectively implement the interventions. While several case studies were presented, they tended to be educationally related, or were directed toward larger businesses. Most of the models presented were effective for a particular case study, but they did not offer the flexibility needed to be applied across a wider segment of the occupational field. The models would also be difficult to use for different types of interventions (i.e., engineering controls vs. training programs).

As an example, if we look at implementing an intervention in a particular small business segment, we must handle this differently than if we are dealing with a large company such as General Motors. Consider a small business site, dry cleaning, for example. If our intervention plan is successful, we have implemented change in only a fraction of a percentage of the workers in that business segment. To affect change in a larger segment, the plan would need to be repeated many times at many different sites. If we were working with a large company, our intervention would be affecting a major percentage of workers in that particular occupation. In addition, implementing the intervention in the rest of the industry segment would be easier because of the greater visibility and attention large U.S. corporations receive.

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GENERIC MODEL

A broad model is needed in order to be effective in large and small businesses and for a wide variety of interventions. Considering the work of Dr. W. Edwards Deming [Deming, 1986], a business model may be more effective for implementing interventions. This model would be more generic; it could be applied to large and small businesses, to engineering controls, to administrative controls, to worker education, to management education, or to any other type of intervention that could be developed by a resourceful researcher. The model might look something like the following.

1. Identifying a market. Identify a business segment, occupation, or other category in need of study. This could be done through a number of means such as epidemiologic studies, surveillance, etc.
2. Market research. After identifying the business segment or occupation, an assessment is needed to determine the appropriate type of intervention. This might include industrial hygiene surveys, engineering control assessments, or any other types of surveys required to determine the needs of the occupation or business segment.
3. Product design. This is where the specific intervention is designed and tested. This testing would not be driven by the desire to determine if the overall intervention is effective, but rather to determine if the intervention is properly designed. If we use an engineering control as an example, the testing would demonstrate how effective a control is in reducing a worker's exposure. For a training program, the testing might evaluate a group of workers' understanding and acceptance of the material presented. The information generated at this step tells Marketing of the intervention product.
4. Product marketing. After the intervention product has been shown to be effective in the test marketing step, it

is ready for marketing to the business segment or occupation of concern. The marketing plan needs to be different for each situation. For example, marketing through a trade association might work in some situations, but not in others. Groups on which to concentrate might include labor unions and organizations, trade and professional associations, the popular press, or private companies (who may wish to manufacture and market the intervention). This will probably be the most important step in an intervention plan, because no matter how effective the intervention is, customers must be convinced to implement it. Data generated in the product design step will be useful in the marketing effort. For example, this control can reduce exposures by 70% and cut energy costs by 10%.

5. Market research. More research of the market is needed to evaluate the overall effectiveness of the intervention. This evaluation could be done in a number of ways including epidemiologic studies, medical surveillance, and industrial hygiene measurements. Market penetration of a control or intervention program could also be used as a measure of effectiveness. This evaluation looks at how effectively the entire intervention plan is implemented. Based on the results of this evaluation, the process might cycle back to steps 2 or 3 to form a cycle of continuous improvement.

Will this approach work for intervention research? It is difficult to say, but it is used in the production of other types of goods and services. Interventions should be thought of as products. If a product is to be a success, it must be useful, and you need to convince people to use it. I believe that this approach to intervention research can be successful.

REFERENCES

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