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## **Chapter 1**

### **Introduction**

#### **Preface**

We, the Nevada Mining Association (NvMA) are pleased to bring you this *NvMA Industrial Hygiene Sampling Manual*. Our intention for this manual is to serve as an aid to individuals who are just starting in industrial hygiene. For example, if an equipment operator or millwright is now charged with doing dust sampling, the dust sampling chapter can serve as an aid in performing the sampling.

The manual was created through the work of several different mining companies working through the NvMA. The NvMA extends its sincere appreciation to those individuals who contributed to the production of the manual.

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## **Introduction**

This book is intended as a guide for personnel just beginning Industrial Hygiene in the mining industry. It contains step-by-step instructions on basic industrial hygiene sampling techniques. However it is not meant as a technical manual for IH. Updates will be periodically added to the manual. The complete updated manual can be downloaded from the Nevada Mining Association (NvMA) website at <http://www.nevadaminig.org/>.

This book is intended to be distributed free of charge. The manual and information within is not intended to be sold for profit by anybody.

## **What Is Industrial Hygiene?**

Industrial hygiene is the science of keeping people safe and healthy at work and in their communities. Industrial hygienists (IHs) are professionals dedicated to the health and well-being of workers. Originally industrial hygienists worked primarily in factories and other industrial settings but as our society has changed, so has the definition of industrial hygiene. Today, IHs can be found in almost every type of work setting. Industrial hygienists also use the term OEHS or occupational and environmental health and safety to refer to the work that they do.

## **What Does an Industrial Hygienist Do?**

IHs still work to prevent illness or injury from hazards in industrial settings. They may also be found working to prevent ergonomic injuries in the office; measuring noise levels at an airport; supervising the safe removal of lead, mold or asbestos; and in thousands of other settings. Industrial hygienists may sample air, soil or water to determine if there are harmful substances present. They may fit test a respirator to ensure that a worker is breathing cleaner air.

Industrial hygiene saves lives, improves quality of life, and increases productivity. Safe, healthy workers are more efficient. Injuries can mean many days or weeks out of work, or even permanent disability, causing serious economic hardship to a worker and his or her family.

You should contact IH Accredited Lab for more information,

<http://www.aiha.org> use this link for the list of accredited labs. This link will provide you with laboratory programs, education knowledge, experts in industrial hygiene.

## What Is NIOSH Manual of Analytical Methods (NMAM)?

NMAM is a collection of methods for sampling and analysis of contaminants in workplace air, and in the blood and urine of workers who are occupationally exposed. These methods have been developed or adapted by NIOSH or its partners and have been evaluated according to established experimental protocols – (<http://www.cdc.gov/niosh/nmam/protocols.html>)

and performance criteria. NMAM also includes chapters on quality assurance, sampling, portable instrumentation, etc.

NIOSH recommends that the best method available be used for making each measurement. Methods published by others, such as [OSHA](#), [MSHA](#), [EPA](#), [ASTM](#), [ISO](#) or commercial suppliers of sampling and analytical equipment, may have advantages over NIOSH methods for a given sampling situation. (An Industrial Hygienist should determine the sampling protocol, considering analytical accuracy, cost, and optimum sample number.) Every method should undergo an initial evaluation to demonstrate performance. When a method is used in a laboratory that did not perform the initial evaluation, that laboratory should verify that comparable results can be obtained. NIOSH methods may need to be modified, and if modified, should be re-evaluated. Various OSHA regulations (e.g. [benzene](#)) mention performance criteria for evaluating whatever method is used.

NIOSH has published methods developed in cooperating laboratories. These method performance have been evaluated using established experimental protocols. These methods were selected based upon priorities established in a joint NIOSH/AIHA survey of participating laboratories.

<http://www.cdc.gov/niosh/nmam/> use this link to access NIOSH Analytical Methods & how to use them