Application of the ILO International Classification of Radiographs of Pneumoconioses to Digital Chest Radiographic Images: A NIOSH Scientific Workshop

The NIOSH Perspective

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THIS IS AN IMPORTANT ISSUE...

WE SINCERELY APPRECIATE YOUR TAKING THE TIME TO HELP

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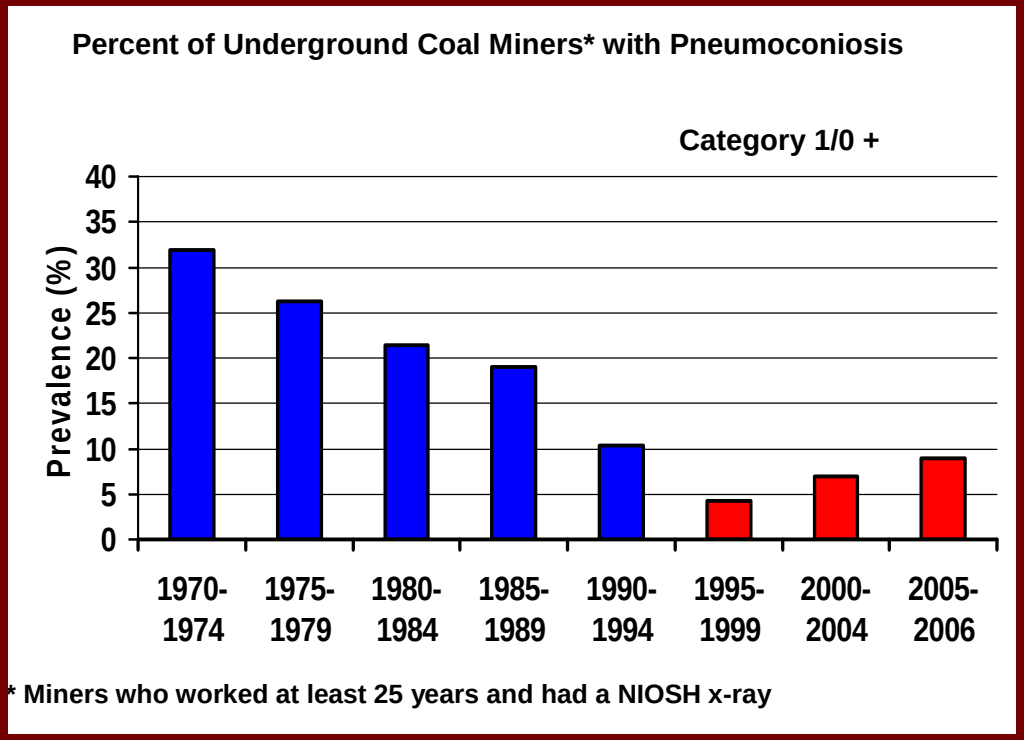
The ILO Classification - Background

- "A means for describing and recording systematically the radiographic abnormalities in the chest provoked by the inhalation of dusts."
- International Conference on Silicosis, Johannesburg, 1930
  - Modifications/revisions 1950, 1959, 1970, 1980, 2002
- "Used internationally for epidemiological research, for screening and surveillance of those in dusty occupations, and for clinical purposes. May lead to better international comparability of data concerning the pneumoconioses."
- Object: "to codify radiographic abnormalities of the pneumoconioses in a simple, reproducible manner. Does not define pathological entities nor take into account working capacity. Does not imply legal definitions of pneumoconioses for compensation purposes."

The Challenge: ILO Classification of Digital Chest Radiographs

- **Why is there a need?**



The Challenge: ILO Classification of Digital Chest Radiographs

- **Why is there a need?**
  - **Digital imaging market penetration**
  - **Soon majority of facilities exclusively digital**

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The Challenge: ILO Classification of Digital Chest Radiographs

- **How to assure detailed and uniform images for classification?**
  - **Multiple hardware systems (DR, CR)**
  - **Software versions, compression algorithms**
  - **File formats, compatibilities**
  - **Display terminal: resolution, perception, image manipulation**
  - **Display of ILO Standard Radiograph images**
- **How best to merge science and practicality?**
  - **Adequate specification of procedures, software, and file formats**
  - **Objective evidence for equivalence with traditional approach**
  - **Commercially available systems (evolving technology)**

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Compensation and Clinical Evaluations

Health Surveillance Programs

Epidemiological and Clinical Research

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Health Surveillance Programs

Coal Workers

OSHA Regulations

Private Industry

Compensation and Clinical Evaluations

Federal Benefits

State Workers Compensation

Tort Liability

Epidemiological and Clinical Research

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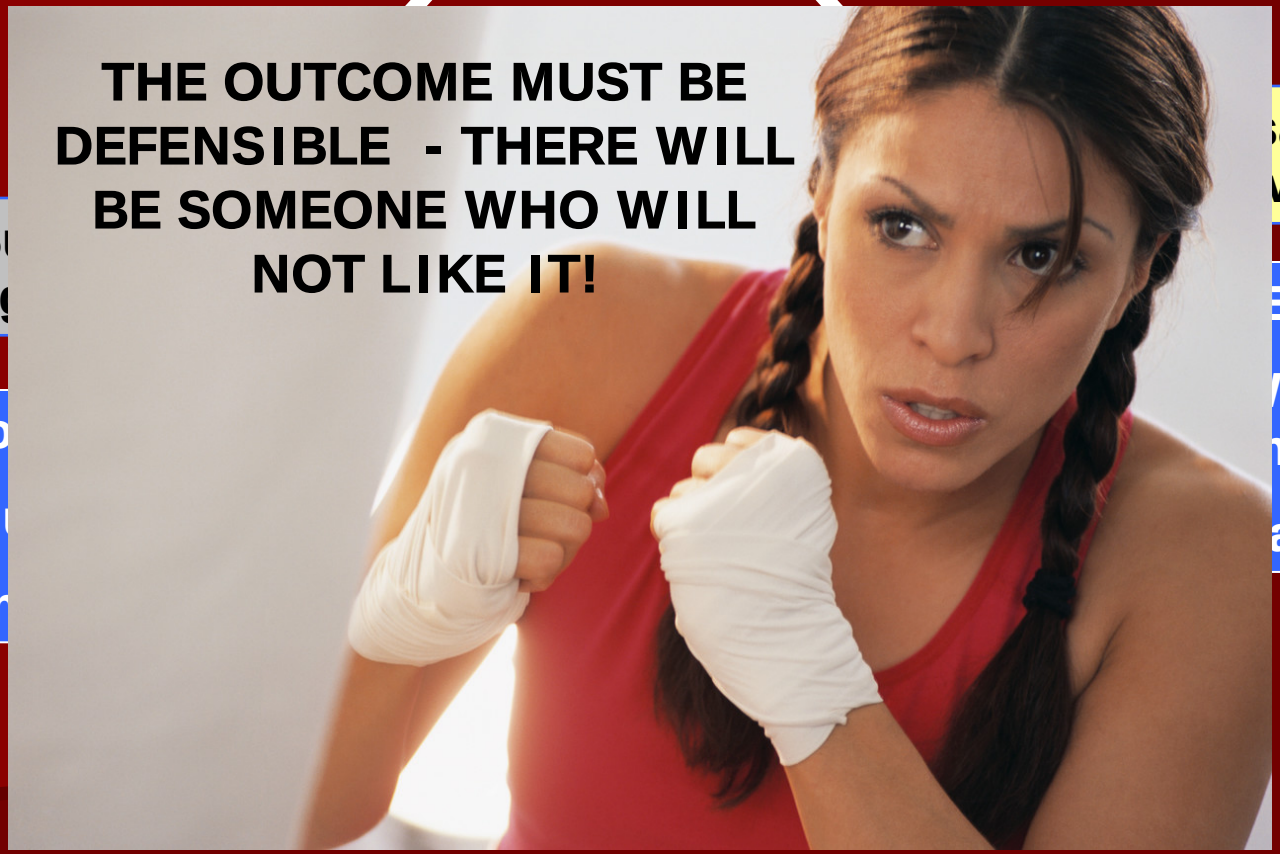

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The NIOSH Perspective

- **A science-based but practical specification for the acquisition and formation of digital chest radiographic images**
  - **Assure uniformity and integrity of digital images used for classification**
  - **Methods, equipment, procedures, and conditions that lead to images equivalent to traditional chest radiographs for reliably demonstrating the absence, presence, and extent of dust-related pulmonary abnormalities**
  - **Procedures and criteria to approve facilities**
  - **Practical and reliable performance criteria to assure continuing image quality**

The NIOSH Perspective

- **A science-based but practical specification for the classification of digital radiographs using the ILO system**
  - **Procedures, image processing, display hardware, file formats and storage, including software options**
  - **Comparison images (i.e., ILO standard radiograph images) for classification of digital images**
  - **Image manipulations permissible during classification**

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- **Local and disseminated systems for managing digital chest images**
  - **Interoperability**
    - **Data formats, file management**
    - **Software and hardware compatibility**
  - **Secure image transfers from x-ray facilities and to readers**
  - **Assure confidentiality, reliable file identification**
  - **Durable data archives**

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- **Capacity to examine and approve B Readers using digital chest radiographic images**
  - **Remote examination**
  - **Preservation of the integrity of the process**
  - **Equivalence of digital B reader examination with previous hard copy examination**
    - **Selection of digital examination images**
    - **Quality assurance and/or calibration functions**

The NIOSH Perspective

- **The integration of digital images into occupational practice must be done now.**
- **It requires the best information available and support from numerous partners.**
- **Thank you for agreeing to contributing your time, knowledge, and experience!**

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