

# NIOSH Health Hazard Evaluation at an Organic Cannabis Farm

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# **NIOSH Health Hazard Evaluation: Harvesting and Processing Cannabis at an Organic Farm**

- ❑ In June 2015, the United Food and Commercial Workers International union made an HHE request to NIOSH**
- ❑ Conducted 2 site visits in 2015**



## NIOSH HHE: Background

### □ Farm:

- Operated by the owner and three employees
- Five acres
- Grew pesticide-free cannabis
- Grew *Cannabis sativa*, *Cannabis indica*, and a hybrid
- 40 plants (over 8 feet tall; over 6 feet wide) grown in hoop houses

# NIOSH HHE: Background

## □ Site visit activities:

- Observed work practices
- Conducted confidential medical interviews
  - Work history
  - Use of personal protective equipment
  - Any symptoms when working with cannabis
  - Long-term health and safety concerns related to their job

# NIOSH HHE: Background

## □ Site visit activities:

- Performed ergonomic evaluations on specific tasks
  - Measured pinch force used to pull leaves off stems
  - Measured force to remove bud with trimming scissors
  - Evaluated repetitive motion of the hand and fingers during final hand trimming

# NIOSH HHE: Background

## □ Site visit activities:

- Collected air samples for microbial (n=26) and endotoxin (n=26) analysis
  - Concerns about acute and chronic (e.g., asthma, bronchitis) respiratory symptoms
  
- Collected surface wipe samples (n=33) for THC
  - Previous study indicated that occupational surface levels of THC have the potential for dermal and ingestion exposures
  - Suggested levels measured were unlikely to pose a significant health risk under normal conditions\*

\* Martyny JW, Serrano KA, Schaeffer JW, Van Dyke MV [2013]. Potential exposures associated with indoor marijuana growing operations. J Occup Environ Hyg10(11):622–639, <http://dx.doi.org/10.1080/15459624.2013.831986>.





Bud snipping force was estimated by having the employee reproduce the force with the handles of the scissors transmitting the force to the pinch gauge





An employee harvesting cannabis.



Employee performs "big leafing" from a stem as it hangs on a line.





An employee removes the flower from the stem by pulling the stem through a small, drilled hole in a tin can.



An employee in the final stage of flower hand trimming.

## **NIOSH HHE: Findings**

- ❑ Employees did not report any work-related symptoms**
- ❑ Employees were concerned about repetitive hand motions from trimming cannabis**
- ❑ Some hand trimming activities required a lot of hand motions, but not a lot of force**



## NIOSH HHE: Findings

- ❑ **We found THC on every surface wipe sample**
  - 0.17 to 210 micrograms per 100 cm<sup>2</sup>
- ❑ **Predominant fungus identified was *Botrytis cinerea***
  - Plant pathogen that can cause allergic reactions
  - Associated with Wine Grower's Lung
- ❑ **Endotoxin concentrations were all below the Dutch Expert Committee on Occupational Safety OEL of 90 EU/m<sup>3</sup>**
  - 2.8 to 37 EU/m<sup>3</sup>



# **NIOSH HHE: Employer Recommendations**

- ❑ **As the workforce grows, develop a job rotation plan to move employees around to jobs that require using different muscle groups**
- ❑ **Develop a surface cleaning schedule to remove THC from work and tool surfaces**
- ❑ **Eliminate/improve the tin can bud removal method**
- ❑ **Remove the netting surrounding plants during harvesting so employees are not in awkward positions**
- ❑ **Hang hook lines in optimal work zones consistent with employee size and working technique**

# **NIOSH HHE: Employee Recommendations**

- ❑ Wear non-latex gloves**
- ❑ Wash your skin with soap and water after removing gloves**
- ❑ Clean surfaces after processing cannabis material**
- ❑ If you experience any symptoms you believe are work-related, report them to your supervisor and health care provider.**

## NIOSH HHE: Final Report

- ❑ **NIOSH HHE Report No. 2015-0111-3271: Harvesting and Processing Cannabis at an Organic Farm**
  - Released April 2017
  
- ❑ **Available at: <https://www2a.cdc.gov/hhe/search.asp>**
  - Search word: "cannabis"
  
- ❑ **Learn more about the NIOSH HHE Program at: <https://www.cdc.gov/niosh/hhe>**

## **NIOSH HHE #2: Medicinal Cannabis Grow and Processing Facility**

- ❑ **Union request to NIOSH**
- ❑ **Facility:**
  - Operated by the multi-site owner
  - Grew pesticide-free cannabis indoor and outdoors
  - Processed cannabis products into capsules, oral solutions, bulk oils, and vaporizer cartridges at an in-house processing and laboratory facility
- ❑ **Conducted 1 site visit in 2016**

# NIOSH HHE #2: Medicinal Cannabis Indoor and Outdoor Grow and Processing Facility

## □ Site visit activities:

- Observed work practices
- Interviewed employees
- Collected air samples for microbial and endotoxin
- Collected air samples for terpene and oxygenated compounds
  - Effects: Potential respiratory irritants and/or sensitizers
- Collected surface wipe sample for:
  - THC: psychoactive component of cannabis
  - Delta-9-tetrahydrocannabinol acid (THCA)
    - Acid that is present in raw cannabis
    - Decarboxylated (loss of a carboxyl group) through aging or heat to form THC
  - Cannabidiol and cannabitol

# Acknowledgements:

**Douglas Wiegand PhD**  
**Kerton Victory, PhD, MSc**  
**Brian Lowe, PhD**  
**Nancy Burton, PhD**  
**Brett J. Green PhD**  
**Ajay Nayak, PhD**  
**Angela R. Lemons MS**  
**Donald Beezhold, PhD**