

Marijuana

Public and Occupational Health Issues



Mike Van Dyke, Ph.D., CIH

Section Chief

Environmental Epidemiology, Occupational Health and Toxicology

mike.vandyke@state.co.us



Colorado Department
of Public Health
and Environment

Goals

- Identify EHS issues in the marijuana industry
- Provide guidance to marijuana industry to prevent occupational injuries and illnesses
- Provide guidance to marijuana industry on hazardous waste and sustainability issues
- Surveillance data to follow injury and illness trends
- Others?



Frank and Ernest



! M

AVES

C.R.S. Sec. 25-1.5-111: Specifically-Designated Roles for CDPHE

Only section that directly specifies CDPHE. Several duties outlined:

- a. "Monitor changes in **drug use patterns**, broken down by county and race and ethnicity, and the emerging science and medical information relevant to the **health effects** associated with marijuana use."

C.R.S. Sec. 25-1.5-111 continued...

b. "The Department shall appoint a panel of health care professionals with expertise in cannabinoid physiology to monitor the relevant information. The panel shall:

- Provide a report by 1/31/15 and every 2 years thereafter*
- Establish criteria for 1) studies to be reviewed, and 2) reviewing studies and other data*, and
- Make recommendations, as appropriate, for policies intended to protect consumers of marijuana or marijuana products and the general public*.

** No required duties until we have funding*



FAKE POT REAL DANGER

SMOKING SYNTHETIC MARIJUANA, LIKE SPICE AND K2, HAS LED TO
MORE THAN **200 HOSPITALIZATIONS** IN COLORADO IN TWO MONTHS.

THERE IS A BAD BATCH ON THE STREETS. YOU DON'T KNOW WHAT'S IN IT.



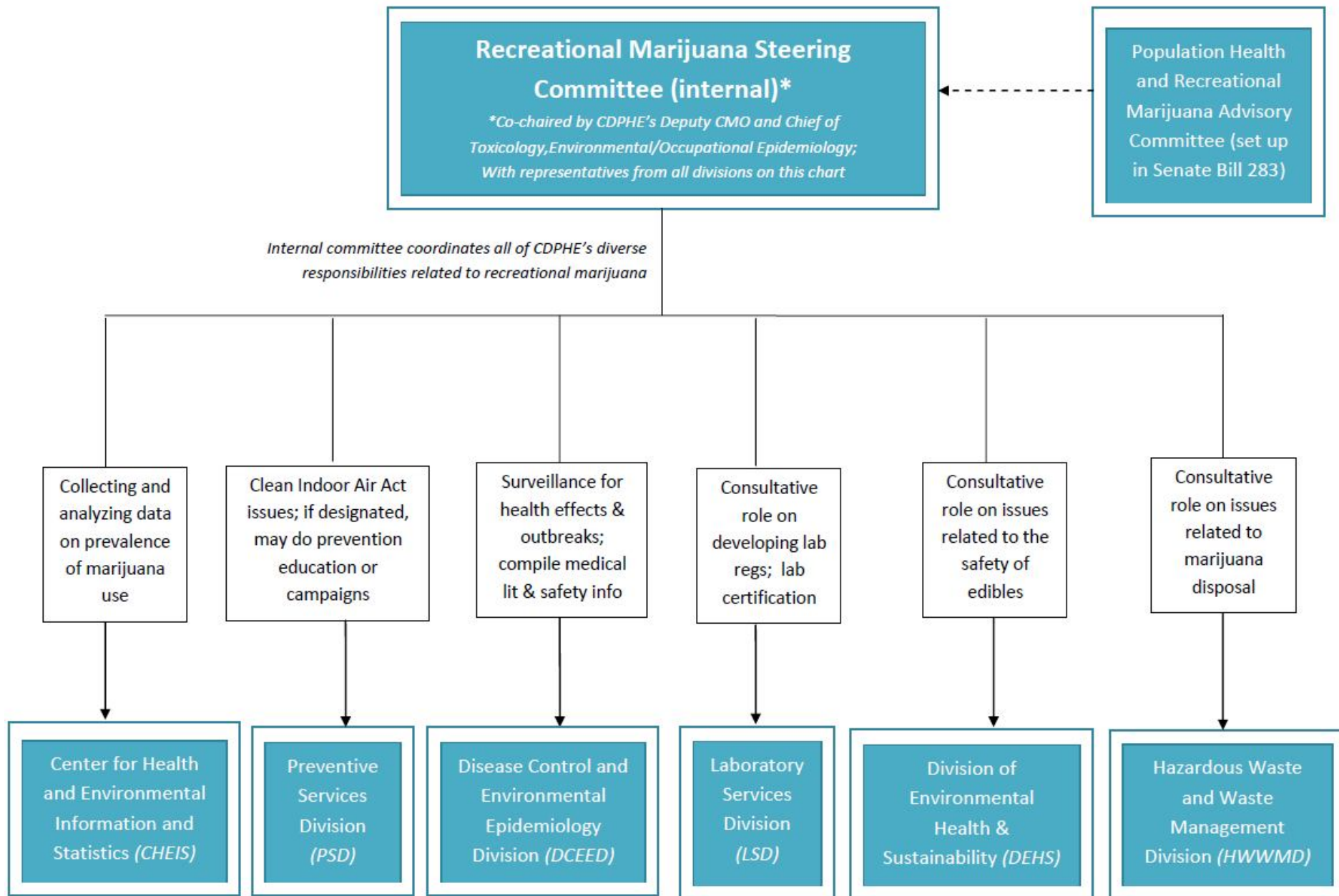
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Legal Marijuana and Public Health



- Monitor health effects
 - Changes in use
 - Accidents
 - Poisonings
 - Chronic health issues
- Education and Prevention
 - Adolescent use
 - Pregnant or nursing mothers
 - Product safety and storage
 - Harm reduction
 - Occupational health and safety
- Infused product safety
- Laboratory practices
- Waste disposal

Governance of Recreational Marijuana-Related Activities at the Colorado Department of Public Health and Environment (CDPHE)



Data and Surveillance Tools

- Death Certificates
- Hospitalization Records
- Emergency Department Visits
- Emergency Medical Services Response
- Healthy Kids Colorado Survey (aka YRBS)
- Behavioral Risk Factor Surveillance System (BRFSS)
- Tobacco Attitudes and Behaviors Survey (TABS)
- Pregnancy Risk Assessment Monitoring System (PRAMS)
- Problem Identification Report with CDOT
- All Payer Claims Database
- Adding marijuana as a reportable condition (possible)



Potential Collaborators

- Rocky Mountain Poison and Drug Center
- Pediatric Environmental Health Specialty Unit (PEHSU)
- CU/Denver Health Toxicologists
- Pharmacology
- Denver/Colorado Epidemiology Work Groups
- Children's Hospital
- ER Physicians
- Substance Abuse/Addiction Medicine
- Others??

Possible Research

- Using medical marijuana surplus from registration fees:
 - may conduct clinical/observational research related to medical marijuana
 - Possible clinical trials

Preventing Negative Health Outcomes

- Submitted supplemental budget request to address:
 - Adult abuse prevention,
 - Prevention of use during pregnancy/breastfeeding
 - Secondhand smoke prevention,
 - Identification of high risk populations through surveillance to target with messaging



Educate on Appropriate Retail Use

- Campaign will also provide:
 - Education about the law to retailers and users
 - Emphasis on restricting youth access
 - Reinforce Clean Indoor Air Act (CIAA)
- CDPHE staff will coordinate response to CIAA complaints



More Resources

FAQs: Marijuana and Methods of Use

pg. 1 of 2

Although marijuana use might help reduce the symptoms of certain medical conditions, it also may have some harmful effects depending on how often it is used. The heart, about use. Marijuana includes alcohol or breath marijuana of the

FAQs: Health Effects of Marijuana

pg. 1 of 3

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IS MARIJUANA SAFE?

Although marijuana may help reduce symptoms of certain medical conditions, it also may have some harmful effects depending on how often it is used. There is clear evidence that regular use of marijuana increases the risk of heart, lung and mental health problems. Less is known about the health issues that might be caused by casual or infrequent marijuana use. Marijuana is a natural product that doesn't have to be tested in a lab. Typical marijuana plants contain more than 400 chemicals, including about 60 that can interact with the body's nervous system. If you smoke marijuana you might inhale more than 2,000 chemicals. Many of those chemicals are similar to the ones in cigarette smoke. Marijuana also can be contaminated with mold, insecticides or other chemicals. Health effects of many of these chemicals are not known.

WHAT ARE THE EFFECTS OF USING MARIJUANA?

The effects of marijuana may include:

- A happy, relaxed or "high" feeling
- Slower reactions
- Dizziness
- Trouble thinking, learning and remembering
- Confusion, anxiety, panic or paranoia
- Fast heart rate
- Increased blood pressure
- Less interest in normal activities



www.colorado.gov/cdphe/marijuana

www.learnaboutmarijuanawa.org

www.drugabuse.gov



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EHS and the Marijuana Industry

- Employee and employment issues
- Current Colorado rules
- Potential H&S issues

Employer/Employee Issues

- Covered by OSHA
- Must follow Colorado labor laws
- Employees must have “Occupational License”
 - Apply thorough DOR
 - 21 years old
 - Pass criminal background check
 - Prove Colorado residency

Colorado Rules

- Enforcement through the Colorado Department of Revenue (1 CCR 212-2)
- Specific environmental, health, and safety rules
 - Retail Marijuana Store
 - Retail Marijuana Cultivation Facility
 - Retail Marijuana Products Manufacturing Facility
 - Retail Marijuana Testing Facility

Common Requirements

- Required to comply with local codes
- Sanitation
- Employee training
- Access control
- Security
 - Alarms
 - Locks
 - Video surveillance



Cultivation Facilities

- Pesticide/Ag Chemical requirements
 - SOPs
 - MSDS/Labeling
 - Comply with Pesticide Applicators Act
 - Long list of prohibited chemicals

Product Manufacturing Facilities

- Food safety training
- Concentrate manufacturing requirements
 - Written procedures
 - Only butane, propane, CO₂, ethanol, isopropanol, acetone, and heptane allowed
 - Closed loop only – except for ethanol and isopropanol
 - IH Evaluation
 - Quantities
 - Electrical issues
 - Monitoring
 - Fire suppression
 - Ventilation
 - PPE



Study Goals

- Examine 15-20 MGOs during law enforcement entry
- Determine the exposures associated with the investigation of MGOs
- Determine the potential adverse health effects to first responders and children
- Suggest appropriate PPE for first responders



Growing Marijuana 101



- High temperature
 - 71° to 88° F
 - Optimum as high as 95° F
 - Excess heat vented outside
- High relative humidity
 - 50%-70%
- High intensity lighting
 - 2,000 lumens/ft²
 - Controlled photoperiod
- Elevated carbon dioxide
 - 700 to 1500 ppm
- Frequent fertilization
- Pest control (mites & fungi)

Potential Health Hazards of Marijuana Grow Operations



- Outdoors: Low Hazard
 - Pesticide and fertilizer application
 - Harvesting/seizing operations
- Greenhouse grow ops
 - Hazards similar to outdoor operations
 - Moisture resistant structure
 - Adequate ventilation
 - Professional electrical installation

Potential Health Hazards of Indoor Marijuana Grow Operations

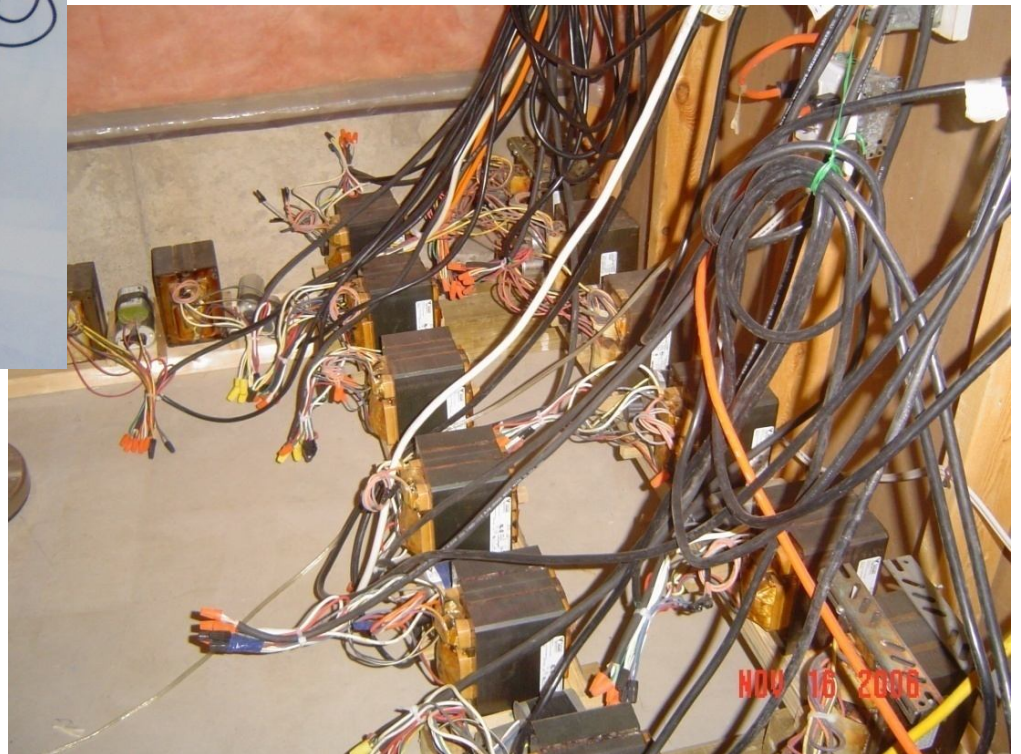


- Concealed operation
- Inadequate ventilation
- Excessive moisture
- Makeshift carbon dioxide concentrator
- Improper electrical installation
- Limited knowledge of safe pesticide and fertilizer handling
- Growers and family live in house

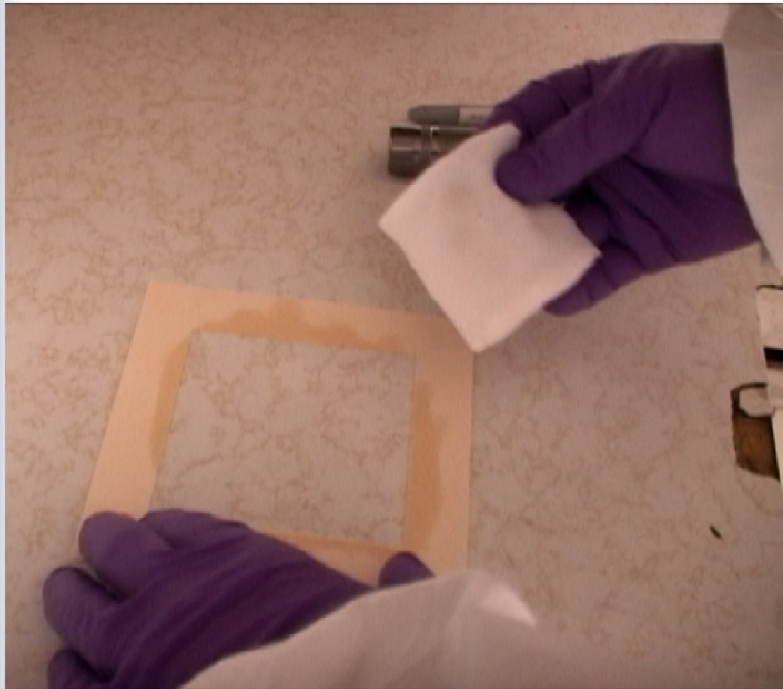
Exposure Concerns

- High humidity and warm temperatures
 - Mold/Fungi
 - Endotoxin
- Elevated combustion pollutants
 - Carbon dioxide
 - Carbon monoxide
 - Oxides of nitrogen (NO_x)
- Pesticides
- Irritant chemicals
 - Volatile Organic Compounds (VOCs)
- High levels of solvents (extraction processes)
- Airborne and surface THC
- Electrical hazards

Electrical Hazards



THC Exposures



- Most surfaces in IMGO's were contaminated with measurable levels of THC
- Handling plants resulted in as much as 2900 $\mu\text{g}/\text{wipe}$ on hands
 - Below levels associated with "high"
- No measurable airborne THC

Other Chemical Exposures



- Low level exposure to terpenes
 - ppb level
 - Below levels associated with chronic health effects
 - May cause irritation symptoms
 - Very strong odors
- No extraction operations observed

Pesticide Exposures



- Little evidence of significant pesticide use
- Limited use of pyrethrin based insecticides
 - All air samples we collected were non-detect
- Some of the pesticides were listed for outside use only. ("Not for residential use")

Combustion Exposures



- Carbon dioxide
 - Normal outdoor level: 350-450 ppm
 - OEL: 5,000 ppm
 - Highest we have seen: 1400 ppm
- Carbon monoxide
 - Average in homes with gas stoves: 0.5-5 ppm
 - EPA Limit: 9 ppm
 - Highest we have seen: 0.8 ppm
- NOx:
 - Non-detect in MGOs

Many MGOs had combustion powered CO₂ generators!

Mold/Fungi Exposures



- In 21/30 (70%) MGOs, mold at levels classified as “IAQ problem”
- During tear-out 6/10 (60%) MGOs mold increased compared to initial samples

Mold levels during plant removal activities were similar to those that would be expected during a medium size mold remediation job.

Conclusions

- Significant mold exposure hazard at most MGOs
 - Allergic symptoms, asthma exacerbation, special considerations for immunosuppressed individuals
- Combustion pollutants were not a significant issue in Colorado MGOs, but remain an acute exposure concern.
- Pesticide use in Colorado MGOs was very limited
- Significant potential for irritation symptoms from volatile organic compounds
- Most surfaces in an MGO are contaminated with significant levels of THC
- Use of respiratory protection and gloves is an important practice for investigators



Contact



Mike Van Dyke
mike.vandyke@state.co.us

Referrals
ToxCall (303) 692-2700
CDPHE_ToxCa11@state.co.us



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Outputs

- Report
 - Lit review
 - Hazard ID
- Tools
 - Example programs
 - FAQs
 - Best practice guidelines
 - Small business guide



Approach

- Workgroups?
 - Safety and Security
 - Wellness and Safety Culture
 - Health (IH)
 - Waste and Sustainability
 - Existing knowledge (resources, lit review, data)
 - Employer policies regarding marijuana??
 - Nuisance odor issues??



Site Visits

- Number of facilities?
- Types of facilities?
- Field team?
- Reports back to larger group?
- Possible exposure monitoring?
- Scheduling?



Timeline

- Meeting frequency?
- Information sharing?
- Email list?
- Deadline?



Dissemination

- CDPHE?
- Dedicated web page?
- Industry meetings?
- NIOSH/OSHA?
- Insurers?

