Oregon
John A. Kitzhaber, M.D., Governor

Department of Land Conservation and Development
635 Capitol Street NE, Suite 150
Salem, Oregon 97301-2540
Phone: (503) 373-0050
Fax: (503) 378-5518
www.oregon.gov/LCD

NOTICE OF ADOPTED CHANGE TO A COMPREHENSIVE PLAN OR LAND USE REGULATION

Date: June 04, 2015

Jurisdiction: City of La Grande

Local file no.: 3-ZON-14

DLCD file no.: 001-15

The Department of Land Conservation and Development (DLCD) received the attached notice of adopted amendment to a comprehensive plan or land use regulation on 06/01/2015. A copy of the adopted amendment is available for review at the DLCD office in Salem and the local government office.

Notice of the proposed amendment was submitted to DLCD less than 35 days prior to the first evidentiary hearing.

Appeal Procedures

Eligibility to appeal this amendment is governed by ORS 197.612, ORS 197.620, and ORS 197.830. Under ORS 197.830(9), a notice of intent to appeal a land use decision to LUBA must be filed no later than 21 days after the date the decision sought to be reviewed became final. If you have questions about the date the decision became final, please contact the jurisdiction that adopted the amendment.

A notice of intent to appeal must be served upon the local government and others who received written notice of the final decision from the local government. The notice of intent to appeal must be served and filed in the form and manner prescribed by LUBA, (OAR chapter 661, division 10).

If the amendment is not appealed, it will be deemed acknowledged as set forth in ORS 197.625(1)(a). Please call LUBA at 503-373-1265, if you have questions about appeal procedures.

DLCD Contact

If you have questions about this notice, please contact DLCD's Plan Amendment Specialist at 503-934-0017 or plan.amendments@state.or.us

DLCD FORM 2

NOTICE OF ADOPTED CHANGE TO A COMPREHENSIVE PLAN OR LAND USE REGULATION

FOR DLCD USE
File No.: 001-15 {23714}
Received: 6/1/2015

Local governments are required to send notice of an adopted change to a comprehensive plan or land use regulation **no more than 20 days after the adoption**. (*See* OAR 660-018-0040). The rules require that the notice include a completed copy of this form. **This notice form is not for submittal of a completed periodic review task or a plan amendment reviewed in the manner of periodic review.** Use Form 4 for an adopted urban growth boundary including over 50 acres by a city with a population greater than 2,500 within the UGB or an urban growth boundary amendment over 100 acres adopted by a metropolitan service district. Use Form 5 for an adopted urban reserve designation, or amendment to add over 50 acres, by a city with a population greater than 2,500 within the UGB. Use Form 6 with submittal of an adopted periodic review task.

Jurisdiction: City of La Grande

Local file no.: **03-ZON-14**

Date of adoption: 05-06-2015 Date sent: 06-01-2015

Was Notice of a Proposed Change (Form 1) submitted to DLCD?
Yes: Date (use the date of last revision if a revised Form 1was submitted): 03-24-2015
No

Is the adopted change different from what was described in the Notice of Proposed Change? Yes (No)
If yes, describe how the adoption differs from the proposal:

Local contact (name and title): Michael Boquist

Phone: 541-962-1307 E-mail: mboquist@cityoflagrande.org

Street address: 1000 Adams Avenue/PO Box 670 City: La Grande Zip: 97850-

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PLEASE COMPLETE ALL OF THE FOLLOWING SECTIONS THAT APPLY

For a change to comprehensive plan text:
Identify the sections of the plan that were added or amended and which statewide planning goals those sections implement, if any:

None. This Notice pertains to a proposed moratorium, pursuant to ORS 197.520.

For a change to a comprehensive plan map:
Identify the former and new map designations and the area affected:

Change from to acres. A goal exception was required for this change.

Change from to acres. A goal exception was required for this change.

Change from to acres. A goal exception was required for this change.

Change from to acres. A goal exception was required for this change.

Location of affected property (T, R, Sec., TL and address): City Wide

The subject property is entirely within an urban growth boundary

The subject property is partially within an urban growth boundary

If the comprehensive plan map change is a UGB amendment including less than 50 acres and/or by a city with a population less than 2,500 in the urban area, indicate the number of acres of the former rural plan designation, by type, included in the boundary.

Exclusive Farm Use – Acres:	Non-resource – Acres:
Forest – Acres:	Marginal Lands – Acres:
Rural Residential – Acres:	Natural Resource/Coastal/Open Space – Acres:
Rural Commercial or Industrial – Acres:	Other: – Acres:

If the comprehensive plan map change is an urban reserve amendment including less than 50 acres, or establishment or amendment of an urban reserve by a city with a population less than 2,500 in the urban area, indicate the number of acres, by plan designation, included in the boundary.

Exclusive Farm Use – Acres:	Non-resource – Acres:
Forest – Acres:	Marginal Lands – Acres:
Rural Residential – Acres:	Natural Resource/Coastal/Open Space – Acres:
Rural Commercial or Industrial – Acres:	Other: – Acres:

For a change to the text of an ordinance or code:
Identify the sections of the ordinance or code that were added or amended by title and number:

None. This Notice pertains to a proposed moratorium, pursuant to ORS 197.520.

For a change to a zoning map:
Identify the former and new base zone designations and the area affected:

Change from	to	Acres:
Change from	to	Acres:
Change from	to	Acres:
Change from	to	Acres:

Identify additions to or removal from an overlay zone designation and the area affected:

Overlay zone designation:	Acres added:	Acres removed:

Location of affected property (T, R, Sec., TL and address): City Wide

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List affected state or federal agencies, local governments and special districts: City of La Grande

Identify supplemental information that is included because it may be useful to inform DLCD or members of the public of the effect of the actual change that has been submitted with this Notice of Adopted Change, if any. If the submittal, including supplementary materials, exceeds 100 pages, include a summary of the amendment briefly describing its purpose and requirements.

Please find attached a copy of the signed Resolution for the Marijuana Moratorium Correction Program, the Ordinance Extending a Moratorium on Marijuana Facilities, and the City Council Staff Report for both items which includes the adopted Findings of Fact and Conclusions.

Agenda Item 5.a.
Office Use Only

CITY of LA GRANDE

COUNCIL ACTION FORM

Council Meeting Date: **May 6, 2015**

PRESENTER: Michael Boquist, City Planner

COUNCIL ACTION: **PUBLIC HEARING AND SECOND READING by TITLE ONLY of ORDINANCE EXTENDING THE MORATORIUM ON MARIJUANA FACILITIES**

1. MAYOR: Open the Public Hearing and announce that the Rules of Order for this Public Hearing were read in their entirety during the Special Session of April 6, 2015 and that the Public Hearing was closed and therefore no additional public testimony will be heard.

2. MAYOR: Request Staff Report

3. MAYOR: Invite Council Discussion

4. MAYOR: Entertain Motion:

   SUGGESTED MOTION: I move that the proposed Ordinance Extending the Moratorium on Marijuana Facilities be read for the second time by title only, put to a vote, and adopted.

5. MAYOR: Invite Additional Council Discussion

6. MAYOR: Ask the City Recorder to read the Ordinance a Second Time by Title Only

7. MAYOR: Ask for a roll call Vote.

****

EXPLANATION: During the Regular Session of January 14, 2015, the City Council adopted Ordinance 3219, Series, 2015, declaring a moratorium prohibiting the establishment and operation of any new marijuana facilities and the expansion of any existing facilities in any area within the City Limits of the City of La Grande.

ORS 197.530 limits the duration of a moratorium to one hundred twenty (120) days, which will result in the moratorium expiring on June 13, 2015. However, ORS 197.530 also allows for the moratorium to be extended a maximum of three (3) times, limited to six (6) months per extension for the purposes of completing a Correction Program. For an extension to be justified, the City Council must adopt findings stating "the conditions giving rise to the moratorium" continue to exist. Such findings are provided in the attached City Council Staff Report and Draft Decision Order, dated April 6, 2015.

During the April 6, 2015, Special Session of the City Council, public testimony was received from Mr. Michael Chamlee, 2405 Empire Drive, in support of the moratorium. No other public testimony was provided.

The City Manager recommends that the Council proceed with the Second Reading by Title Only of the proposed Ordinance.

****

Reviewed By: (initial)	
City Manager	MS
City Recorder	GMO
Aquatics Division	____
Building Division	____
CED Department	____
Finance/Human Resources Department	____
Fire Department	____
Library	____
Parks Department	____
Planning Division	CV
Police Department	____
Public Works Department	____

COUNCIL ACTION (Office Use Only)

☐ Ordinance Adopted
First Reading: _____
Second Reading: _____
Effective Date: _____

☐ Motion Passed
☐ Motion Failed
☐ Action Tabled: _____
Vote: _____

☐ Resolution Passed
Effective Date: _____

Recessed: _____
Work Session: _____
Other: _____

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CITY of LA GRANDE
ORDINANCE NUMBER 3222
SERIES 2015

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF LA GRANDE, UNION COUNTY, OREGON, EXTENDING THE MORATORIUM ON MARIJUANA FACILITIES

WHEREAS, on January 14, 2015, pursuant to ORS 197.520, the City of La Grande City Council adopted Ordinance 3219, Series 2015, declaring a moratorium prohibiting the establishment and operation of any new marijuana facilities and the expansion of any existing facilities in any area within the City Limits of the City of La Grande, Union County, Oregon.

WHEREAS, on April 6, 2015, by Resolution of the City Council of the City of La Grande, the City Council adopted a *Marijuana Moratorium Correction Program* that includes a structured process for proposing new land use regulations which are necessary for correcting the problem creating the moratorium; and,

WHEREAS, pursuant to ORS 197.530, the duration of said moratorium is effective for one hundred twenty (120) days, expiring on June 13, 2015, and said moratorium may be extended a maximum of three (3) times, limited to six (6) months per extension for the purposes of completing the Correction Program; and,

WHEREAS, the Correction Program schedule outlines a process that will be completed in 2016 and the moratorium must be extended to provide sufficient time to complete the Correction Program.

NOW, THEREFORE,

THE CITY OF LA GRANDE ORDAINS AS FOLLOWS:

Section 1. JUSTIFICATION OF NEED FOR MORATORIUM
The City Council of the City of La Grande, Union County, shall and hereby does find that the conditions giving rise to the moratorium continue to exist and adopts the Findings of Fact and Conclusions of Law provided in the City Council Staff Report, dated April 6, 2015.

Section 2. MORATORIUM EXTENSION DECLARED
The City of La Grande, Union County, Oregon, hereby extends the moratorium for a period of six (6) months, prohibiting the establishment and operation of any new marijuana facilities and the expansion of any existing facilities in any area within the City Limits of the City of La Grande, Union County, Oregon. As used in this section, "marijuana facility" includes any facility that grows, tests, dispenses or otherwise distributes marijuana pursuant to any provision of Oregon law.

Section 3. DURATION OF MORATORIUM EXTENSION
The moratorium extension declared by this ordinance shall be effective for six (6) months from the ending date of the moratorium declared by Ordinance 3219, Series 2015, until December 13, 2015, unless sooner rescinded.

Section 4. ENFORCEMENT
The Chief of Police is charged with enforcement of the moratorium declared by Ordinance 3219, Series 2015.

Section 7. SEVERABILITY
If any provision of this Ordinance or its application to any person or circumstance is held invalid, the invalidity does not affect other provisions or applications of this Ordinance that can be given effect without the invalid provision or application, and to this end the provisions of this Ordinance are severable.

Section 8. EFFECTIVE DATE
This Ordinance shall become effective thirty (30) days after its adoption by the City Council of the City of La Grande, Oregon, and its approval by the Mayor; specifically, June 5, 2015.

ADOPTED ON this Sixth (6th) day of May, 2015, by Six (6) of Six (6) Councilors present and voting in the affirmative.

APPROVED this Sixth (6th) day of May, 2015

Stephen E. Clements
Stephen E. Clements, Mayor

ATTEST:

Angelika N. Brooks
Angelika N. Brooks
City Recorder

APPROVED AS TO FORM AND CONTENT

Jonel K. Ricker
Legal Counsel for the City of La Grande

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CITY of LA GRANDE
THE HUB OF NORTHEASTERN OREGON

CITY COUNCIL STAFF REPORT – APRIL 6, 2015
DRAFT DECISION ORDER
& FINDINGS OF FACT AND CONCLUSIONS

LAND USE APPLICATION(S): *Marijuana Moratorium, File Number 03-ZON-14*

APPLICANT(S): *City of La Grande*

SITE LOCATION: *Citywide*

1. On January 14, 2015, pursuant to ORS 197.520, the City Council adopted Ordinance 3219, Series, 2015, declaring a moratorium prohibiting the establishment and operation of any new marijuana facilities and the expansion of any existing facilities in any area within the City Limits of the City of La Grande, Union County, Oregon.

2. The City Council adopted the Findings of Fact and Conclusions of Law in the City Council Staff Report, dated January 14, 2015, which justified the following need for the moratorium pursuant to ORS 197.520. The following conditions and need continue to exist.

Finding: The recently adopted Land Development Code amendments, Ordinance 3215, Series 2014, established the following standards for locating recreational and medical marijuana facilities within the City of La Grande:

A marijuana facility shall not be located: [LDC Article 3.21, Section 3.21.004]:

1. *At the same address as a registered grow site.*
2. *Within 1,000 feet of the real property comprising a:*
   - a) *Public or private school, elementary, secondary or career school attended primarily by minors; or,*
   - b) *Public library; or,*
   - c) *Public park; or,*
   - d) *Community recreation facility attended primarily by minors; or,*
   - e) *Participant sports and recreation facility attended primarily by minors; or,*
   - f) *Licensed daycare center*
3. *Within 1,000 feet of another marijuana facility.*

The adopted regulations do not address marijuana producers that grow/cultivate for private use or retail/wholesale purposes; or, processors such as those that produce extracts and other products. Also, the La Grande City Council has expressed a desire to consider increased regulations to mitigate potential adverse impacts created by this new industry sector.

Following are adverse impacts that the City has identified as potentially causing "irrevocable public harm" to existing businesses, residences and other development within the vicinity of a marijuana facility:

1. Offensive Odors: Some marijuana facilities (private and commercial) have been described as generating strong and offensive odors that have a "skunk-like" smell that is noticeable from adjacent properties or common wall apartments. For smaller facilities, odors may be noticeable from as close as from one dwelling unit to another. For larger operations, odors may be noticeable from as far as several hundred feet away from a facility. In fact, Spokane County, Washington, where marijuana facilities have been allowed since 2012, is finding that odor conflicts are a significant issue and is considering adopting new regulations to address such adverse impacts. (See Exhibit 1, *The Spokesman-Review* article). On November 24, 2014, the City Planner met with a citizen who wishes to remain anonymous, that lives adjacent to a registered grow site located in the City of Cove, Oregon. This citizen has been suffering increased respiratory symptoms for the past year, that coincidently coincides with the neighboring grow operation. These respiratory symptoms may also be associated with mold spores, as discussed in item #2 below. They claim that the odors and other adverse impacts are so great that it has caused significant adverse effects on the livability of their property. Lack of sufficient buffer space between such facilities and adjacent homes

and businesses to mitigate the impacts of the offensive odors could also adversely impact property values of adjacent property.

2. Mold/Health Conflicts: Public exposure to toxic molds, which can be developed in marijuana, is a significant health concern. Research has shown that high-levels of mold spores within structures can infest the surrounding building environment and travel through HVAC systems, resulting in significant health hazards to occupants within buildings, to emergency personnel and other individuals, such as neighbors within multi-family and commercial buildings. (See Exhibits 2a-c, *Articles*). Lack of sufficient buffer space between such facilities and adjacent inhabited properties to address the potential health impacts of these toxic molds could also adversely impact property values of adjacent property.

3. Economic Development/Health: Measure 91 *[Section 18(3)]* does not require a licensed premise to be "enclosed by a wall, fence or other structure". Also, marijuana is allowed to be smoked within a permitted facility, with no regulations governing potential adverse impacts to neighbors. The lack of regulations increase the potential exposure to second hand smoke from the use of marijuana via open air, shared HVAC systems within buildings, etc. Lack of sufficient buffer space between such facilities and adjacent inhabited properties, particularly those with shared walls, to address the impacts of second hand smoke could also adversely impact property values of adjacent property. The siting of the current medical marijuana facility in La Grande raised concerns by adjacent business owners regarding the negative impacts on their businesses which may result from the proximity to the dispensary. Should such impacts occur, it would be detrimental to the economy of La Grande and would only be exacerbated by additional facilities opening in commercial areas. (See Exhibits 3a-c, *Articles*)

4. Safety Risks/Explosions: Measure 91 allows the manufacturing of marijuana products, such as hash oils. Exposure to explosions and fires during the marijuana extract process, particularly for hash oils, is not uncommon. There have been several documented cases of serious injuries and deaths resulting from explosions and fires. The most recent event occurred in Tigard, Oregon, November 23, 2014, where two men were injured as a result of a hash oil explosion. (See Exhibits 4a-d, *Articles*).

5. Environmental Damage: Potential environmental damage from growing and manufacturing is common on grow sites on public lands due to the chemical fertilizers used to control mold, insects and other pests. In an urban environment, these contaminants may affect the City's sewer treatment facility and possibly adjacent properties. Also, growing and manufacturing facilities in an urban environment are found to be higher consumers of utilities, such as electricity and water, which is gradually becoming a greater concern as the availability of some utilities are becoming less and rates are increasing. (See Exhibit 5a-b, *Articles*).

3. On April 6, 2015, the City Council held a Work Session to discuss the marijuana moratorium, and the development of a Correction Program to resolve the issues giving rise to the moratorium.

4. On April 6, 2015, following the Work Session the City Council held a Public Hearing and adopted a Correction Program, which directs Staff to develop new land use regulations governing marijuana facilities and proposed such regulations for consideration by the City Council, beginning in December, 2015.

EXHIBIT 1

THE SPOKESMAN-REVIEW November 14, 2014

County takes public input on pot zoning

Kip Hill
The Spokesman-Review

Tags: Initiative 502 marijuana planning Spokane County zoning

Spokane County planning commissioners heard an earful Thursday about a nose-full of marijuana odor, as they considered revising where pot businesses can operate.

Carl Caughran, a rural landowner near Cheney, said his wife now suffers asthmatic symptoms from what he called a "skunk-like" smell wafting over property lines from a big growing operation next door.

Caughran said a Tier 2 growing operation, which means the owner can have up to 10,000 square feet of growing cannabis, opened next door without notice. He agrees with imposing a moratorium on new growers and producers based on his experience, he said.

Voters approved marijuana for recreational use in 2012.

The opponents' testimony led to the suggestion of stopping the licensing of new marijuana growers, producers and sellers within the county, an offer that met with some support from volunteers of the seven-member board that advises the County Commission on land-use issues.

The county does not license marijuana businesses. That process is handled by the state's Liquor Control Board. County and city governments only have the authority to determine where retailers, producers and processors can do business.

In January, the Washington attorney general's office declared cities and counties were within their legal rights to ban producers, processors and retailers through zoning codes, though at least one legal challenge has been made to a city outlawing marijuana sales.

"The Planning Commission does not have the authority to enact a moratorium in an interim ordinance. That can only come from the County Commission," County Planning Director John Pederson said after several audience members requested such a provision in their testimony.

Caughran said he doesn't object to the pot industry. "There's a place for that industry," he told the planning commission.

His property is zoned rural/traditional, a designation that allows for larger residential plots and "resource-based industries," including ranching and farming. The current marijuana zoning ordinance for the county allows growing cannabis in these areas, among other properties zoned under the "rural" category, as long as growing operations are at least 300 feet from a home.

Caughran and others said that wasn't enough room.

"On any given day, you can drive down the road and within a mile of the facility, you can start smelling that skunk smell," Caughran told commissioners.

But Toni Nersesian, a grower in Spangle, urged the commission to remain fair in its buffer requirements for marijuana producers.

"A swine farm – 200 feet from your house," Nersesian said. "A sewage sludge land application process – I can't even imagine it – can be 50 feet from my house."

According to county zoning codes, such a land application process includes "materials pumped from cesspools, septic tanks, sewage holding tanks and drywells."

Bill Miller, who said he was helping his son start a farm near Spangle, said a moratorium or more stringent zoning regulations could shutter dozens of potential marijuana businesses.

"There's been millions of dollars invested already, relying on new zoning ordinances the commissioners came up with," Miller said.

Cindy Marshall testified directly after Miller, saying that although a stoppage could put dozens of business owners in a bind, the environmental effects were likely affecting a far greater number of people.

"The gentleman that just spoke said 55 people would be out of business if this is shut down," Marshall said. "How many people are being affected right now, as property owners who are adjacent to these businesses?"

Landowner Caughran said he has no beef with growers making a profit. But he doesn't

believe they should be doing so in residential areas, and that's what prompted a spirited response from about 20 residents who testified Thursday morning.

"It's just out of place," Caughran said. The County Planning Commission will accept written testimony through next week on the commission's website (http://spokanecounty.org/bp/content.aspx?c=2603) .

2a
EXHIBIT

Dr. Thurstone.com

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Home >> Marijuana >> Health hazards of indoor pot grows

Health hazards of indoor pot grows

Posted by Christine Tatum in Marijuana, Research, Uncategorized | 0 comments

Sep 12, 12

Hello there! If you are new here, you might want to subscribe to the RSS feed for updates on this topic. X

Living with a greenhouse *in* your house is hazardous to your health — so hazardous that adults who expose children to such an environment are guilty of child abuse, John Martyny of National Jewish Health and an associate professor for the University of Colorado Denver said Sept. 10.

Martyny, working at the request of Colorado law enforcement agencies, led a research team that conducted environmental tests of 30 indoor marijuana grow operations in Denver. Of the grow operations tested, 20 had a "medical marijuana component," and at least two were supplying medical marijuana dispensaries, authorities said. Researchers found such extreme levels of mold and spores in the homes, commercial offices and warehouses they tested that petri dishes and field-testing equipment "topped out" and couldn't record the

unexpectedly high levels, Martyny said. You can read the study's findings here.

According to a press release jointly issued by the Colorado Drug Investigators Association (CDIA), National Jewish Health and the U.S. Drug Enforcement Agency (DEA):

> (Martyny's) research showed that in residential and commercial structures, it was difficult to control chemical contamination from pesticides and fertilizers. The study also showed that plant irrigation resulted in increased moisture that could damage building material, result in excessive mold growth and pose a risk of fire and electrocution. The study shows that highly-elevated airborne levels of mold spores within these structures subjected occupants, emergency personnel and other individuals to significant potential health hazards. Potential health effects include hypersensitivity pneumonitis, allergic rhinitis, asthma and other respiratory diseases. Another concern was elevated carbon dioxide levels which, if generated using fossil fuel combustion, can result in the production of carbon monoxide resulting in significant health effects, or death, to exposed individuals.

As for those "other individuals" cited above, count unsuspecting neighbors and office workers — and renters and homebuyers — among them, Martyny said. Again, from the press release, the study shows

> ... others may be impacted as well, particularly in multi-family buildings, which may allow chemicals used and mold spores to be introduced into ventilation systems, exposing other residents.
>
> ... Since these operations may go undetected, an unsuspecting family buying the residence at a later date may be put at risk of adverse health effects due to residual mold contamination.

And then there are children. Martyny reported that he and his research teams found grow operations in homes where children lived — and he minced no words:

"I personally would consider it child abuse," he said. "Children living in an atmosphere like this are very likely to develop asthma and pulmonary disease they will carry for the rest of their lives. ...I would be happy to testify for the district attorney's office (that) the dangers are too significant to have children be in the grow ops."

While Martyny's research in Colorado focused on indoor marijuana grow operations, he said the same environmental harms could result from cultivation of similar densities of any plant, such as tomatoes or snap peas. But hardly anyone grows veggies in their basement. And while marijuana is legal to grow for medical purposes outdoors in Colorado, growers typically opt not to do so for several reasons. Chief among them:

- fears about theft and crime linked to their operations, and
- the difficulties of creating high-potency marijuana outdoors. Martyny cited numerous examples of indoor grow operations where utilities and air vents had been disconnected and/or reconfigured to adjust levels of carbon dioxide to increase the potency of the plants — bolstering assertions from law enforcement officers and medical researchers that much of today's marijuana — especially once the use of pesticides, fertilizers and other chemicals is factored in — is not natural and contains harmful compounds unknown to users.

Martyny's research is well respected in law enforcement circles. He has studied the environmental impact of illicit substance production — especially marijuana and methamphetamine (so-called "meth labs") — for law

enforcement agencies in Canada and the United States for more than a decade. **First responders and officials charged with investigating and removing elements of indoor drug operations have experienced health problems from their exposure** — one Colorado law enforcement officer was hospitalized in critical condition because of his work in a marijuana grow house — and also worried about long-term health risks associated with their work. Martyny's research on indoor marijuana grow operations in Colorado — funded by a Justice Assistance Grant and money from Colorado's police and sheriffs' associations — also resulted in recommendations about how law enforcement officials should dress, equip and otherwise protect themselves while working in such environments.

> **A side note of observation/analysis from me:** I realize marijuana legalization proponents will look at these findings and say, "See? We need to make this stuff legal so we can take it out of houses, apartments, condos and office buildings and put it in big industrial warehouses in commercial business districts. Communities need to set their own rules and regulations! They can decide for themselves how they want to kick these grow operations out of neighborhoods and office buildings."
>
> Suuuuuuuure.
>
> These are also the same legalization champions who are running around, telling everyone that if Amendment 64 passes, law enforcement authorities wouldn't be able to criminalize people for possessing small amounts of the drug and using it at home. They'll have to devote their law-enforcement resources elsewhere, we're told.
>
> Even if a grow operation isn't a small amount of marijuana — which it most certainly isn't — if the drug is legal, you can, indeed, bet that people will absolutely test any and all limits set by municipalities and counties. After all, they currently do — but, with legalization on their side, drug users and addicts will test the regulatory bounds of your county, your city, your neighborhood — and your neighborhood home association — like you have never seen. And you will pay for these legal skirmishes and the increased enforcement.
>
> Many Coloradans haven't begun to consider the regulation that would need to accompany marijuana legalization. They haven't considered all of the regulatory frameworks that would need to be built to protect public health and safety — and I can assure you that Amendment 64 doesn't begin to pay for any of it. Not even close. (I can't wait to see where Colorado is going to find the money to pay for its scaled-down equivalent of the U.S. Food and Drug Administration just to regulate pot …)
>
> With marijuana legalization chiseled into Colorado's state constitution, law enforcement agencies will find it far more difficult to address the marijuana-related problems that stand to affect you, your family and your household. And your home's value? Good luck with that.

2.b
EXHIBIT

(/)

MARIJUANA GROW ROOMS BECOMING COMMON

COLORADO REAL ESTATE INSPECTION SERVICES (/)

Download Brochure (http://www.coinspection.com/uploads/1/1/2/4/11243167/4proof-carlbrahe_brochure3.pdf)

COMMERCIAL INSPECTIONS (http://www.coinspection.com)

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Terms of Service and Privacy Policy (/terms-of-service-and-privacy-policy.html)

Report Log-in (/report-log-in.html)

Add Me to Your Mailing List (/add-me-to-your-mailing-list.html)

Report Log In (http://www.inspection-perfection.com/report-log-in.html)

Carl Brahe (https://plus.google.com/115877295651107364473/about)

As medical and recreational marijuana becomes legal in more states it also becomes legal to grow at home for certain people. The number of houses and commercial buildings that are used for growing marijuana is increasing. Grow rooms are becoming more common. Grow rooms can cause great damage if improperly built or operated.

Poorly wired or overloaded circuits can result in fire, shock or damage to electronic equipment. The most common danger for grow rooms is overloading the circuitry. An average bedroom may share a 15 amp circuit with another room. This means that the wire is able to safely handle 15 amps of electricity at a time. To keep the wire from overheating from too much electricity flowing through it at one time a circuit breaker, or fuse, is wired into the circuit to stop all electricity flow if it gets to be too great. If the wire overheats a fire can result.

If a grow room is made inside this average room a 1000 watt grow light will require a little over 9 amps to operate. That leaves only 6 amps for all other equipment. Add in 100 watts for a circulating fan and 60 watts for an external light source. That consumes your entire available 15 amps. (amps = watts/110 volts)

A larger circuit breaker/fuse might be used to stop power interruption, but that drastically increases the fire hazard. The wire, and outlets, can only handle so much electricity at a time. Increasing the size of the fuse or circuit breaker will not increase the capacity of the circuit. It will increase the temperature that the wire, and outlets might be allowed to reach. In most cases additional circuits can be easily added by a licensed electrician.

Wiring type and quality as well as the kind and condition of breaker/fuse boxes and fixtures should be inspected by a professional. Aluminum wiring and certain breaker boxers increase the likely hood of fire. The cost is little compared to fire and what goes along with it.

Poor quality electrical work may not only endanger your life and property but may also lower resale value. No one objects to having extra, or larger, electrical circuits. It's a plus, but handyman quality, or worse, wiring makes a house harder to sell and will probably sell for less.

Inadequate ventilation can cause several problems. If humidity is allowed to get too high, or if ventilation exhausts in improper places, like attics, chimneys or crawlspaces, mold, wood rot and mortar damage can result. Once moisture content reaches about 19% in building materials for 48 hours mold and rot will grow to begin digesting the building materials. An average cubic foot of air on earth has around 100,000 mold spores. When sufficient moisture is available mold grows.

Ventilated into chimneys the excess moisture can combine with creosote to produce acids that dissolve mortar. Chimney can then leak into living areas. As mortar crumbles bricks/stones are displaced and can fall out.

Growers require ventilation to exhaust heat, moisture

Ignorance is likely the biggest threat to these home growers and the people and property around them. Industrial Hygienist Caoimhin Connell writes: "Remediating a grow house is not difficult and does not usually require gutting the property. The biggest problem in remediating a grow house is getting rid of the odor of marijuana; that can be very difficult." As an afterthought Mr. Connell warns that the airborne levels of THC are high enough that any person living in a grow house, or in an adjacent living unit, will test positive in a urinalysis without actually consuming the marijuana. People in positions that require UAs, such as airline pilots and professional drivers, may be fired or prosecuted as a result of the positive test. All residents of multi unit buildings can be adversely affected in this way.

Hazards Discovered in Grow Houses:

Electrical

- Unsafe wiring
- Oversized fusing
- Damaged fixtures

Structural

- Holes for ventilation and electrical access
- Wood rot
- Rusted hollow columns

Ventilation

- Damaged vents from water heater and furnace
- Rusted gas burning appliances like furnaces
- Mold from venting to interior, attic or crawlspace
- Deterioration of chimney mortar from venting to fireplace

Environmental

- Pollution from hydroponics wastes
- Groundwater
- Wastewater
- Improper use of insecticides
- Health
- CO2 Devices
- Mold
- Insecticide
- Fertilizer

Industrial Hygienist Caoimhin Connell rates some hazards associated with grow rooms:

- One of the most hazardous situations common in each of the grows was the presence of ultrafine particles and excessive levels of carbon dioxide (CO2). The growers typically will use industrial grade propane powered burners to purposely produce elevated levels of CO2 to promote plant growth. The propane burners also inadvertently produce huge quantities of ultrafine particles and carbon monoxide. As a result, normal residential ventilation is incapable of handling these contaminants. The concentration of these contaminants can be so high that they can kill a person – and I performed a criminal investigation wherein this is exactly what happened and a five

and odor, and bring in fresh air, in most cases. Some growers opt for a completely sealed room with no ventilation. A sealed room presents even more dangers to building and occupants.

A sealed room may require a dehumidifier to keep moisture levels in the healthy range. This consumes more electricity. Materials to cover walls to attempt to keep moisture from the building materials may be used. Failure to control humidity can result in portions of the building requiring gutting to correct moisture, mold and wood rot problems.

Plants require CO2 to breath. Without it they die. If a room is sealed the CO2 is consumed by the plants and must be replenished. Propane powered CO2 generators may be used introducing the possibility of gas leaks and explosions. Where industrial propane burners are used to create CO2 to boost production ultrafine particles and CO can accumulate to lethal levels.

Another method is to vent furnaces and water heaters into the room. This probably works fine for the plants, but put all animals and humans at risk for gas poisoning. Besides CO2 which is fairly harmless to humans gas burning appliances produce carbon monoxide which is deadly and sulfur dioxide which is highly corrosive.

These vents are designed and installed specifically for the appliance. If the venting is altered toxic gases may leak into living areas. If vent gases allowed to cool too much sulfuric acid forms and damages vent pipes and appliances. Hot vent gases could cause a fire.

Excess humidity can cause burners, vent pipes and cabinets of water heaters, furnaces and boilers to rust. Moisture vented into areas with gas burning appliances or not vented from room with furnace air returns, can also cause this.

Another result of excess humidity is the growth of insects and rodents to eat them. The most common things that are hazardous to your property or that create an unhealthy environment involve too much water.

It is never a good idea to cut holes in a foundation. The entire building and all of its weight rest on the foundation. Any alteration to the foundation will affect everything above. In Colorado, at least, most grow rooms and even commercial grow houses probably pose few threats to future buyers and residents. People growing medical marijuana for their own use, in their own homes are probably not as likely as large-scale illegal growers to damage their own living environments.

month old little girl was killed by the presence of the grow.

- The next most common hazard is the electrical wiring situation. Very extensive and elaborate wiring is present inside these houses. The wiring never meets electrical code (obviously), and treacherous exposed and convoluted wiring arrangements are almost always found. The residential wiring system is simply incapable of handling the electrical needs of a grow, and as a result, growers frequently tap directly into the overhead power lines to obtain the necessary electrical power.
- Next greatest hazard is the grow-lights used. The grow lights produce massive exposures to UV light. In turn, the UV spectrum can not only damage unprotected surfaces, but also, the UV light is energetic enough to break down airborne materials (such as vapors or pesticides, etc) into a soup of other unknown contaminants with unexpected and unpredictable health consequences.
- The majority of grows in which I have been involved, involve growers who essentially consider themselves "environmentally conscience" and as such don't typically use 24D, 24T, chlordane, lindane, or the like. More often, they choose to use grow products that market themselves as "organic" (the fact that the other compounds are also truly organic is not important to the grower).

Issues for home buyers:

- The primary issue for a home buyer will be the residual odor.
- The second most notable concern will be the liability associated with the proper disposal of chemicals that have been used at the property. Have hazardous materials been properly discarded? If the property is on city sewer, it is likely that most of the chemicals will have been illegally dumped down the sewer. If the property is on septic, the septic system should be evaluated for explosive vapors and corrosives, before it is pumped. The leach field may also have been killed off or the soils may now contain hazardous materials.
- The third most notable concern will be residual chemical exposure in the property. The primary chemicals will be whatever the grower used, and the THC from the grow. Also, in our experience, illegal drug use/manufacturing and dealing are associated with many of the grows (even the legal ones). Therefore, testing for meth is not inappropriate (we have only encountered one grow that did NOT have meth). Proper trash-out cleaning should be adequate for restoring virtually all of the properties thus effected. A small portion of them will require industrial type cleaning.

Meet Colorado's Marijuana-Friendly Real Estate Broker

Posted: 01/09/2014 5:24 pm EST

Now that Colorado is the first state in the nation where adults 21 and over can purchase recreational marijuana legally (http://www.huffingtonpost.com/2014/01/01/marijuana-shops-open-colorado_n_4519506.html), it was only a matter of time before other businesses started to capitalize on the green rush. Enter the "420 Friendly Realty Broker."

Denver residential real estate agent Bob Costello launched his "marijuana-friendly" campaign and (http://www.420realtybroker.com/) website on Jan. 1, when legal recreational sales began in the state. Colorado's Amendment 64, which legalized marijuana for recreational use, also allows homeowners to grow up to six pot plants for personal use. In just a week, he's had plenty of interest, Costello told The Huffington Post.

"I've had about 30 calls about this, and for a real estate broker it's great, you want a lot of leads," Costello said. He noted that despite the many stereotypes and stigmas that still exist about the marijuana-user, even in 2014, the people who have contacted him thus far are "nice, normal people, very friendly."

He has even heard from one set of parents who had been growing marijuana in their apartment in secret, but are finally looking to buy their first home in the spring, and hope to continue to grow there in the privacy of their own home.

What Costello offers is an understanding of Colorado's marijuana laws and a marijuana-positive attitude for clients who happen to enjoy pot.

"I don't give the attitude or lectures on lifestyle choices," Costello said. "So we can have this open discussion about the concerns of household with marijuana users, perhaps they want to also grow -- we can talk about all of this without judgement."

Costello said that prospective homebuyers in Colorado who are interested in the possibility of growing marijuana need to be aware of the laws and some of the issues that can crop up when setting up a grow room. According to Costello, it all starts with location.

"First of all, you want to be in a marijuana-friendly city like Denver, Edgewater, Wheat Ridge or Pueblo," Costello said. "You probably also want to get a house that's not too close to a school, maybe not too close to something controversial."

The next most important things for potential homebuyers and home-growers are mold and electrical service at the property.

"The number one thing to be concerned about is mold. You need to have proper ventilation and you've got to have dryers and you have to put some thought into the way you want to set up your grow room so it doesn't cause you a mold problem," Costello said. "But the other thing that's important is the kind of amperage you can pull in at the home. Some older neighborhoods can be limited in how much amperage you can even get into the house without putting a new panel for larger distribution. So I can help them work out solutions for issues like these."

Costello said he's already spoken to one couple who is excited to move to Colorado now because of the recreational marijuana laws. "They already like skiing and now they can live the lifestyle they want as well," he said. "It's the exact opposite of what some of the politicians say that it's going to scare people away."

Despite the success he's seeing with his new marketing campaign, he said not everyone at his office, the Brokers Guild, which is home to about 700 agents, was supportive of his new strategy.

"There's a bigotry, a stigma," Costello said. "When I announced this marijuana-friendly plan and wanted to make sure it was approved by the company, some of the older owners and managers said, 'This is terrible, this is ruining America. How could you do that?'" But Costello said the younger agents in the office were much more accepting, "They told me, 'Damn, I wish I would have thought of that!'"

Costello said being a marijuana-friendly residential real estate broker is just part of his plan -- he is also beginning to develop a hotel for marijuana tourists. Right now he calls it "The Mary Jane Motel," but the project is still in the discussion stages.

"Depending on the laws, the Mary Jane Motel will probably be in Denver because Denver is most friendly," Costello said. "We'll allow smoking in the rooms -- but the rooms won't be traditional motel rooms, instead they'll have big screen TVs, sleeper sofas, couches and refrigerators."

The potential profit is great; Colorado is already a major tourism destination, generating nearly $17 billion from over 60 million visitors in 2012, a record for the state. Beyond tourism, the taxes from recreational marijuana sales are expected to generate roughly $70 million for Colorado (http://www.cnn.com/2013/11/04/politics/2013-ballot-measures/) in 2014. And as for the appetite for both, marijuana tourists have flooded the state since Jan. 1 (http://www.nydailynews.com/news/national/colorado-pot-tours-grow-weed-article-1.1566673), waiting in long lines and participating in first-of-their-kind marijuana tours.

"We won't even call them hotel rooms, we'll call them 'party rooms,'" Costello said of his future motel development plans. "We'd allow smoking in the rooms, perhaps in the common areas, whatever we can figure out is legal."

FIREFIGHTERS PUT OUT BLAZE INSIDE MARIJUANA GROW OPERATION

May 7, 2013 5:42 PM

Commercial marijuana growers sometimes make mistakes using electricity sometimes ending in fire and loss.

- Read More (http://denver.cbslocal.com/2013/05/07/firefighters-put-out-blaze-inside-marijuana-grow-operation/#.UYo54dZtB1Q.email) -

Fire Burns Northern Colorado Pot-Growing Operation (http://denver.cbslocal.com/2013/04/09/fire-burns-northern-colorado-pot-growing-operation/#.UWVd_yQ8giM.email)
April 9, 2013 5:17 PM

FORT COLLINS, Colo. (AP) – Sheriff's officials say a fire has destroyed about 60 marijuana plants in a garage being used to grow pot in Larimer County.

- Read More (http://denver.cbslocal.com/2013/04/09/fire-burns-northern-colorado-pot-growing-operation/#.UWVd_yQ8giM.email) -

COLORADO SPRINGS MAN KILLS HIMSELF WITH UNSAFE GROW ROOM PRACTICES

Using a gas generator to power his grow room a Colorado man dies from CO poisoning.

- Read More (/uploads/1/1/2/4/11243167/colorado_springs_man_likely_died_of_carbon_monoxide.pdf) -

2.C

DENVER NEWS

September 10, 2011
Contact: Public Information Officer
Number: 720-895-4157

National Jewish Health Study Documents Health Dangers of Indoor Marijuana Grows

DENVER, CO. — National Jewish Health's Dr. John Martyny has announced the results of a study designed to determine the health effects from indoor marijuana grow operations. The study was conducted in conjunction with the Colorado Drug Investigators Association (CDIA), Colorado Association of Chiefs of Police (CACP), and County Sheriffs of Colorado (CSOC). These organizations had a growing concern about the safety of their officers involved in entering and dismantling indoor grow operations. The Colorado Drug Investigators Association secured a federal Justice Assistance Grant (JAG) through Colorado's Division of Criminal Justice to finance the study, with the chiefs and sheriffs associations helping to provide some additional funding.

Dr. John Martyny, a professor at National Jewish Health, was the primary researcher on this project. Dr. Martyny and his team also partnered with law enforcement in 2002 when they conducted a study regarding the health impact of clandestine methamphetamine labs. This study resulted in greater safety policies for officers entering and dismantling labs. CDIA Vice President Jerry Peters and CDIA Legislative Liaison Jim Gerhardt coordinated the arrangements for Dr. Martyny and his team to examine and study actual indoor marijuana grow operations. Dr. Martyny tested thirty indoor marijuana grows. His research showed that, in residential and commercial structures, it was difficult to control chemical contamination from pesticides and fertilizers. The study also showed that plant irrigation resulted in increased moisture that could damage building material, result in excessive mold growth, and pose a risk of fire and electrocution. The study shows that highly-elevated airborne levels of mold spores within these structures subjected occupants, emergency personnel and other individuals to significant potential health hazards. Potential health effects include hypersensitivity pneumonitis, allergic rhinitis, asthma and other respiratory diseases. Another concern was elevated carbon dioxide levels which, if generated using fossil fuel combustion, can result in the production of carbon monoxide resulting in significant health effects, or death, to exposed individuals.

Dr. Martyny's study shows that the greatest risk is to individuals residing in the residence. However, others may be impacted as well, particularly in multi-family buildings which may allow chemicals used and mold spores to be introduced into ventilation systems, exposing other residents. Exposure to children living in these operations also may result in illness, injury or death to an innocent child. Fires may cause damage not only to the indoor grow but also surrounding houses. Lastly, Dr. Martyny cites that, since these operations may go undetected, an unsuspecting family buying the residence at a later date may be put at risk of adverse health effects due to residual mold contamination.

Based on the study and its findings, Dr. Martyny believes that the primary exposure present in indoor marijuana grows consists of high levels of mold spores, low-toxicity pesticides and other chemicals, carbon monoxide and electrical hazards. The recommendation for initial responders, such as a SWAT team, includes fire-resistant gear, chemical-resistant gloves, boots, and a water-resistant and disposable respirator. Officers with any kind of immune system deficiencies should avoid entry into an indoor marijuana grow. He recommends that investigators involved in the removal phase wear full-face air-purifying respirators as well as other protective clothing. Dr. Martyny emphasizes that his recommendations are minimum

suggestions and that, when in doubt, safety equipment should be upgraded.

A copy of the report may be found on the Association's website at **www.cdiausa.org**.

Comments:

"DEA agents expect to face certain threats in our job, such as potentially violent criminals, guns and drugs. But the unseen dangers in marijuana grow houses that are described in this study pose an equally serious threat to the health and safety of our agents and law enforcement partners."
Barbra Roach, Special Agent in Charge DEA Denver Field Division

"The results of this study are far reaching not only as evidence of environmental dangers for first responders, but to children and adults living in and adjacent to these contaminated environments."
Ernie Martinez, President, Colorado Drug Investigators Association

"Sheriffs in Colorado remain alarmed at the intrusion of the marijuana industry into the safety of our communities and of our deputies. This report adds yet more evidence to support those concerns. Expansion of these hazardous conditions that dangerously expose our deputy sheriffs, industry workers, and even unsuspecting home and business owners is contrary to common sense."
Stan Hilkey, 2012 President, County Sheriffs of Colorado (CSOC)

"The Colorado Association of Chiefs of Police thanks the Colorado Drug Investigators Association and National Jewish Health for their work on this important study. The results are significant for not only law enforcement but the general community as well, particularly as the proliferation of indoor marijuana grows continues in our residential neighborhoods. The study will serve as a guide for future strategies concerning this issue."
Tom Deland, President, Colorado Association of Chiefs of Police

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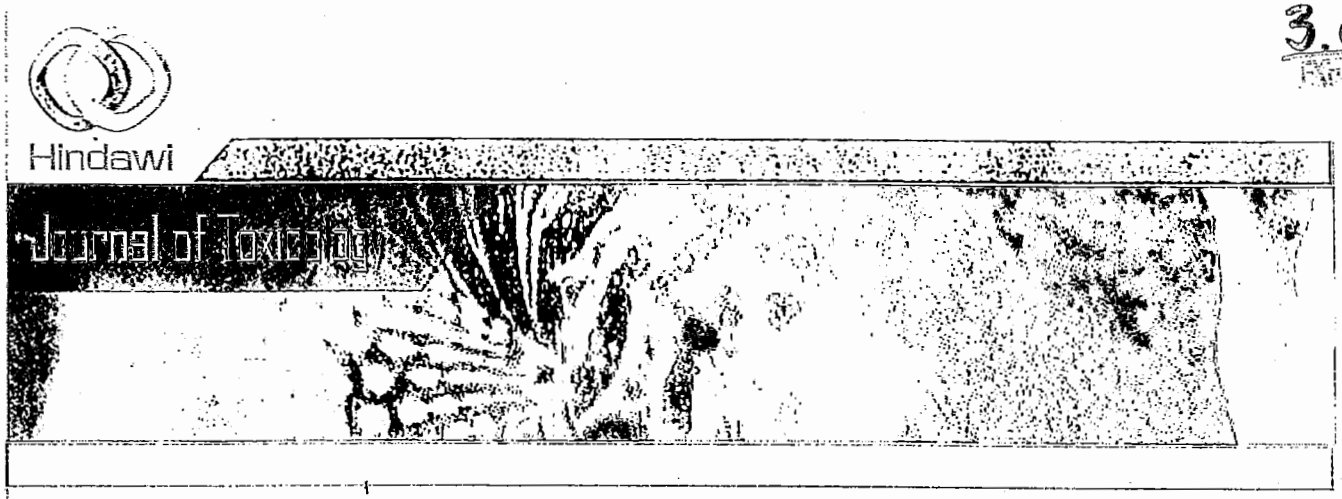

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Research Article

Determination of Pesticide Residues in Cannabis Smoke

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Abstract

The present study was conducted in order to quantify to what extent cannabis consumers may be ex through inhaled mainstream cannabis smoke. Three different smoking devices were evaluatec representative of pesticide exposures possible for medical cannabis users. Three different pesticide with the plant growth regulator paclobutrazol, which are readily available to cultivators in cc experiment. Smoke generated from the smoking devices was condensed in tandem chilled gas trap spectrometry (GC-MS). Recoveries of residues were as high as 69.5% depending on the device us that the potential of pesticide and chemical residue exposures to cannabis users is substantial and n absence of adequate regulatory frameworks.

1. Introduction

Cannabis *sativa* L. has been widely utilized by humans for thousands of years for the relief of a wid States, there are currently 18 different states and the District of Columbia that legally allow for the states of Colorado and Washington have legalized the use of cannabis by adults for recreatio departments are now being tasked to best enact appropriate laws, rules, and regulations on the use

purposes. While medicinal use of cannabis in a smoked form may be widely debated as an effecti titration of dose lend it to be extensively used by many patients as their preferred delivery metho considerable consumption via smoking of dried cannabis flowers. In an effort to help aid patients understand the potential harms of contaminated cannabis we sought to determine to what ex mainstream smoke, produced from cannabis, when inhaled through various smoking devices curr Mainstream smoke consists of the smoke inhaled from a smoking device directly while sidestream the device and is not directly inhaled.

The ubiquitous use of pesticides in agriculture has earned itself a long history in the United States : 1910 to the now heavily engaged US Environmental Protection Agency (US EPA), Federal Depar Department of Agriculture (USDA) along with individual state regulators [1]. According to a repc (GAO) in 2003, the use of pesticides on tobacco crops was limited to 37 pesticides, which includ and other classes of pesticides. Allowable pesticides and residue levels on food crops are deter monitoring of the presence and levels of residues are conducted by the FDA and USDA. However, s not set tolerances on the residue levels on tobacco crops. Consequently, tobacco is only monitored f while the residue levels are not federally regulated [2].

To date, there are no approved pesticides or application limits established for use on cannabis crop this crop is currently illegal [3]. The use of pesticides and plant growth regulators in medicinal c prevalent by both testing laboratories and authority laboratories alike. Many commercially avail systems, some only approved for use on ornamental crops, are widely available from a variety of sou hydroponic shops, and various, sometimes unscrupulous, online vendors. While 18 states allow c current medical cannabis supply lacks regulations and enforcement related to the quality and Laboratories operating within California have reported that cannabis samples contaminated with re 2009 the Los Angeles City Attorney's office covertly acquired and then tested three medical c dispensaries and found that in two of the samples exceedingly high levels of bifenthrin were found amount was measured, and in the other, 85 times the legal limit was measured, although the exact q

Many medical cannabis products are currently cultivated, processed, and prepared by private enti The lack of quality control results in patients potentially being exposed to cannabis contaminated directly quantified, additional health complications in patients may become a contingency of p long-term cannabis use studies. Regardless, pesticide toxicity is well documented [5] and mor immunocompromised patients or patients with other conditions, such as diseases of the liver, pesticide exposure [6]. Additionally, during heating pyrolysis products from the plant material form which may interact with the pesticides or pyrolysis products of the pesticides forming more toxic n form from the pesticide residues alone [7]. As stated in the review by US General Accounting Offic pesticides through inhalation causes the most rapid appearance of toxic symptoms, and the p pesticides is respiratory failure [2]. Considering these issues, evaluation of the exposure from addressed so that new regulations can be properly guided.

A previous pesticide study conducted with filtered tobacco cigarettes had positively identified the r to range from 2 to 16% [8]. Additionally, the distributions of volatilized pesticides and pyrolysis p and sidestream smoke were found to differ [7]. The mainstream smoke pesticide residues consist p by distillation characteristics related to steam volatility, while in the sidestream smoke, a larger por same study, it was determined that about one half of ^{14}C-labeled pesticides were retained in a cott For the most part, since cigarette filters absorb a significant portion of the volatilized residues a associated with smoking tobacco, little concern for pesticide exposure to tobacco smokers has bee often do not include filtration processes and because of this the potential quantities of pestici

dramatically when compared with tobacco smoking. In the present study, we chose to evaluate bo better understand this effect with cannabis and commonly employed medical cannabis consumptio of plant material causes the formation of carcinogens, there has been no direct correlation in the combusted cannabis [8]. The presence of pesticide residues is therefore critical to be monitored, an cannabis for medicinal purposes may also be more physiologically susceptible to negative impacts ca

To prevent overtreatment of tobacco with pesticides, certain application limits on crop treatmen tobacco smokers, but these are not fully federally regulated [2, 9, 10]. Industrial and other labora which pesticide residues transfer into the smoke stream in order to validate what quantities of pest values have been used to help moderate the levels of pesticide exposure of the public [5, 11]. Con lack of analogous regulations set in place for the medical cannabis supply, it is important that th under conditions commonly employed by the medicinal user. In order to determine the existe cannabis smoke stream, a number of pesticides and a plant growth regulator which are readily a measured in high frequency in various medical cannabis products (unpublished data, The Werc S different smoking devices, chosen to provide a broad overview, were used in the study; a small glas outfitted with activated carbon filters and cotton filters.

2. Methods

2.1. Chemicals

Acetonitrile, methanol, and water of analytical grade as well as washing acetone and methanol of Aldrich, St. Louis, MO, USA. Bifenthrin and diazinon were purchased from Chem Service, West C were purchased from Sigma Aldrich, St. Louis, MO, USA. Virgin coconut carbon and cotton we Valley, CA, USA.

2.2. Smoking Devices

The water pipe was manufactured by Scientific Inhalations, Inc. and is named the McFinn Triple consisting of first a 2.5 cm cup for placement of the flower material, followed by a 2.5 cm connector, 15 cm water chamber having a 3.1 cm inner diameter and a water fill line 3.8 cm from the base. The chamber connected at a 45° angle through a 5 cm fitting that is located 12.5 cm above the base o further connects to a mouth-piece. A special mouth-piece was custom made by Scientific Inhalatio bottle apparatus. The glass pipe was custom made by Scientific Inhalations to be 10.5 cm long wit diameter that included a special mouth-piece configuration for easy adaption to the gas-wash bottle

2.3. Method for Identification and Quantification of Pesticide Residues by GC-MS

Analysis was conducted with a GCMS-QP2010 PLUS (Shimadzu, Japan) gas chromatograph-mass s a Shimadzu SHRXI-5MS 30 meter, 0.25 mm i.d., and 0.25 um film thickness column. Gas chrom temperature 250.0°C, splitless injection mode, column oven temp. 50.0°C held for one minute, follo finally increased to 300°C for 15 minutes by 10°C/min. The column flow was set to 1.69 mL/min selected ion monitoring (SIM) mode with two reference ions for each pesticide to avoid false p calibration curves were prepared in matched matrixes, which were prepared from unspiked plant m for all the experiments as described in Section 2.6.

2.4. Preparation of Pesticide Spiked Plant Material

Plant material was prepared by first placing approximately 8 grams of homogenized cannabis flower

vortexed at 1200 rpm until the small non-leafy material fell to the bottom. This material was the further remove small non-leafy material. This process was repeated five times until the plant mater might otherwise incur poor homogeneity of pesticide distribution in the bulk of the material.

To the sifted plant material, a concentrated solution of pesticide mixture in methanol, prepared to diazinon, 4.37 mg/mL paclobutrazol, and 6.18 mg/mL permethrin, was then added incrementally to selected to allow for full quantification of residues captured in the gas wash bottle solutions. A tot was added to 7.4860 g of the material incrementally. Each increment was carried out by adding 1 ml bottom flask containing the plant material that was then vortexed at 1300 rpm over a 2 minute perio placed on a rotary evaporator and rotated at 50 rpm for 3 minutes while under vacuum. This was r evaporated. The flask was then covered in a dark encasing and stored at −20°C until further used. Fr were prepared and evaluated for homogeneity of the pesticide distribution. The measured values recovery calculations in the smoke condensate.

2.5. Apparatus and Method for Condensation and Recovery of Pesticide Residues in Smoke Stre

The smoke stream was collected by being directed through two gas washing bottles which were pla −48°C. The gas wash bottles were filled with 100 mL of analytical grade methanol each. The gas w tube in tandem to a vacuum pump intermediated by a gas flow regulator. The end of the system was glass fitting or direct connection via tygon tubing. A vacuum was applied to the system using a di Essex, CT, USA) in order to pull smoke from the smoking device and through both of the gas wash l

In order to ensure that the draw rate and vacuum pressure were constant throughout all experimen vacuum settings. A long glass column was placed upright in a water vessel filled with a constan column, a tubing fitting was fixed and vacuum tubing connected. To the tubing, a valve at a cons enter and prevent the water from being pulled into the vacuum. After having twelve different curre end of a tube attached to the valve while instructed to emulate the draw strength they typically us that the draw rate of an average smoking device user was approximately 1.2 L/min. This draw ra ensuring that the vacuum was set to draw at a rate that yielded height in the water column corresp before, during, and after each experiment to ensure the simulated inhalation flow rate was as consist

2.6. Smoking Procedure

The smoking procedure was carried out by passing the flame of a disposable lighter over the plant n while the vacuum was applied at 1.2 L/min. For each experiment, approximately 0.45 g of spiked c bottles were taken after being shaken and agitated to capture any condensate on the walls and stems Samples were then stored at −20°C in the absence of light. All glassware, tubing, and smoking devic and acetone between experiments. In the case of the water pipe, water was used in the water cha when applicable, 7.5 g of virgin coconut carbon was used in the carbon filter cartridge, while 0.7 g c After each experiment using the filtered device, the cotton and carbon were extracted with 15 mL GC-MS. Experiments were carried out in triplicate for each device.

2.7. Preparation of Calibration Curves

Three sets of calibration curves were prepared, each in different matrixes that consisted of smoked possible ion suppression from the matrixes. All matrixes and plant material samples were ensured t and further analysis. For the preparation of the raw plant material matrix, approximately 4 g of u source as that which was spiked was extracted with 100 mL of analytical grade methanol and stir filtration through a Buchner funnel. Smoke condensate matrixes from the glass pipe and the water

with each device as described in Section 2.6 and storing the solutions in a dark container at −20°C was then used to dilute the stock solutions of pesticides for generating calibration curves in each ma

3. Results

The calibration solutions of chemical residues were prepared in the three separate matrixes and th Table 1. Table 2 presents the chemical residue content of the spiked plant material. Chemical res tabulated in Table 3, as well as the percent recovery with respect to the spiked plant material. It shc in the gas wash bottles was found in the first wash bottle, representing excellent recovery capabi chemical residues from the activated charcoal was below the lowest calibration level and is th comparative recovery of chemical residues from each of the smoking devices.

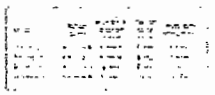

Table 1: Calibration curves and goodness of fit values.

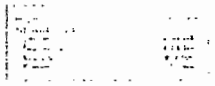

Table 2: Spiked plant material extractions.

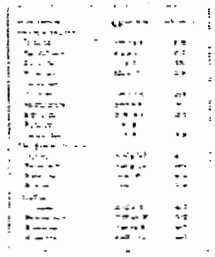

Table 3: Recovery of pesticides in smoke condensate.

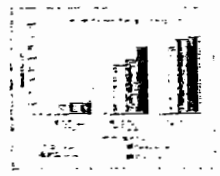

Figure 1: Percent recovery of pesticides from the smoke stream from each device.

4. Discussion

The relative amounts of pesticide residues present in other smoked plant material, most notably amount present in raw plant material, as well as the levels of transfer into the smoke stream. These r on pesticide application on tobacco crops and reduce the potentials of pesticide toxicity in consu already possess negative health complications, exposure to pesticides may create additional health care approaches. In addition, the awareness of proper and safe pesticide use and application is ver especially one that will be inhaled. Understanding to what extent chemical residues may be consum but also improper applications of pesticides on cannabis crops may lead to other contingencies s contamination. To bring attention to the importance of pesticide awareness and to further the regul impending recreational cannabis supplies, the present study demonstrates quantitatively the pot smoke stream under the conditions often encountered by cannabis users. While the variance l

considering the vast number of variables including heating conditions, and other inherent variations

From the data presented here, the recoveries of pesticide residues in the smoke stream are very signi the end consumer. A previous study with filtered tobacco cigarettes published by Cai et al. [9] note smoke stream was 2 to 16%. The range of pesticide residue recovery in that study was comparable t in the present study, but without filters the recovery from the present study was much higher as evi the cotton filters in a cigarette or water pipe are critical in capturing and reducing pesticide residue the cotton filters (Table 3) contained a significant portion of the pesticides passed through the de amount of pesticides, but this may have been due to heating and desorption of retained compounds plant material combustion point. Between the glass pipe and the water pipe with no filters, the re glass pipe was used. This difference may be attributed to the comparable levels of surface area for condensation, as well as factors such as total path length, smoke stream total flow rate velocity, a Additionally, the water pipe contained room temperature water that aids in cooling the smoke s recoveries between individual pesticides (Figure 1) show significant differences in the recovery attributed to the variations in stability of each compound, volatilization characteristics, and to wha combustion of the plant material surface.

It should be noted that different levels of pesticides present on different varietals of cannabis flowers amount of pesticides potentially being inhaled. Different user behaviors including depth of breath heating method may also impact overall individual exposure amounts. In our lab we use validated acceptable daily intake levels for a 40 Kg individual consuming 10 g of flower material per day. material at levels lower than the levels utilized in this study, a number of samples seen have failed co by local authorities [4]. Additional efforts are ongoing to quantify the amount of pesticides bein products.

5. Conclusion

The present study clearly demonstrates that chemical residues present on cannabis will directly trar the end user. Recoveries occurred in the highest quantity with the hand-held glass pipe, ranging unfiltered water pipe ranged between 42.2% and 59.9%, and recovery from the filtered water pipe ra previously, the effects of filtration have a significant impact on the total residues consumed. Whil general the portion of pesticide recovery is alarmingly high and is a serious concern. Although pes the environment [14], it is evident from this study that some are highly resistant to pyrolysis a agreement with previous studies noting the distillation behavior of pesticides in mainstream smok exposure through cannabis smoking is a significant possibility, which may lead to further heal revelation certainly confounds previous metastudies seeking to determine the possible negative co use, as our experience with a breadth of samples indicates a significant possibility that the negativ have been the result from various chemical residue exposures resulting from the use of unregulated and regulate cannabis products, a strong regulatory approach will help to reduce the potential publi exposure. While it is fortunate that chemical residue recovery may be minimized with smoke filteri today with no adequate regulations, as there is no better way to avoid pesticide and other chemic present on the product in the first place. Active sampling and analytical monitoring of the cannabis current patients and state regulatory authorities, are needed to help further guide the developm methods and testing standards that will avoid environmental contamination and consumer threats t

Conflict of Interests

The authors declare that they have no conflict of interests.

Acknowledgments

The authors would like to gratefully thank the team members of Scientific Inhalations for all of the also like to thank the Pasadena Area Community College District for their grant support of Nichola

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3.b

TruthOnPot.com

DON'T MISS Is Marijuana Addictive?

Pesticides, Bacteria And Mold In Cannabis: The Risks

By TruthOnPot.com on July 6, 2013

Summary (click to view)

Mold can take on many different forms in cannabis. Signs to look out for include black spots, dark green spots, or white/grayish stringy matter.

TruthOnPot.com – Pesticides, bacteria and mold can affect almost any plant crop, but the lack of regulations surrounding marijuana puts users at an especially high risk.

While cannabis from illegal growers is almost never tested, even in places where cannabis is legal, regulations for safety testing may be absent or not up to federal standards. This can result in toxin levels that are not only too high, but some marijuana growers may even use pesticides that are banned or unsafe for human consumption.

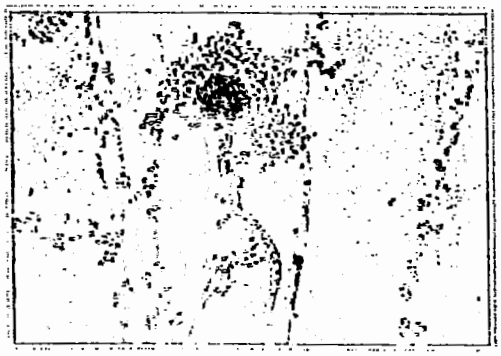
For those who smoke the substance, contaminated cannabis becomes an even larger health hazard since toxins travel a direct route to the blood stream through the lungs.

And while growing your own cannabis is probably the best way of ensuring that what you smoke is safe, the fact remains that most users have no control over what goes into their supply.

As the production of cannabis becomes more widespread, researchers have shed some light on the issue of toxins in cannabis. Their findings seem to highlight a number of causes of concern.

Bacteria and Mold in Cannabis

Contamination from bacteria and fungi tends to be more common than pesticides and poses a risk to both growers and non-growers. Unlike pesticides, bacteria and mold tend to affect cannabis during the drying and curing stages of production.



Aspergillus fumigatus is a common source of disease in patients with immunodeficiency

A **number of small studies** conducted in the 70's and 80's identified **high** rates of mold contamination in illegal cannabis, including Aspergillus and Penicillium. In one **U.S. study**, 9 out of 24 cannabis users tested **positive for antibodies to Aspergillus fumigatus, suggesting that fungi in cannabis can indeed effect the body of an average user.**

A more recent **Dutch study** that tested cannabis samples from 10 different coffee shops and 1 patient organization identified bacteria and/or fungi contaminations in all of them. The study identified a number of common bacteria toxins, including Pseudomonas aeruginosa, Staphylococcus aureus and Escherichia coli (E. Coli)

Bacteria and mold exposure may lead to infections, which is a particular risk for medical users with immune-related conditions. Certain strains of bacteria can also produce highly carcinogenic toxins known as aflatoxins – another potential source of cannabis contamination.

Pesticides in Cannabis

While many growers advocate the benefits of organic cultivation, the use of pesticides has become increasingly popular among larger commercial producers. Pesticides levels in cannabis are rarely studied, but have recently raised concerns in places like California.

In 2009, the Los Angeles City Attorney's office tested 3 samples of medical marijuana from local dispensaries. The results showed dangerously high levels of the insecticide bifenthrin in 2 of these samples. One sample contained 1600 times the legal amount for human consumption and the other contained 85 times the legal amount.

Smoking Methods and Pesticide Exposure

Due to rising concerns over pesticide levels in cannabis, scientists at The Werc Shop – a California-based cannabis lab – set out to investigate the risks that marijuana users face from pesticide contamination. The results, published in 2013, suggest that different methods of smoking could lead to different levels of pesticide exposure.

The bubbler used in the study was the McFinn Triple Filtered Water Pipe (Scientific Inhalations Inc.)

Using 3 types of smoking devices, the researchers found that as much as 60-70% of total pesticide content could be converted to cannabis smoke by using a hand-held pipe. On the other hand, smoke from a filtered water pipe (e.g. bubblers) contained only 0.01-11% of the original pesticide levels. Water pipes without a filter (e.g. bongs) were not nearly as safe as filtered pipes, converting about 40 to 60% of pesticide content to smoke.

The ranges accounted for 3 different pesticides – bifenthrin, diazinon and permethrin – and the plant growth regulator paclobutrazol. Interestingly, the use of a cotton filter – similar to those found in cigarettes – was able to significantly reduce the conversion of pesticides to smoke. Charcoal filters were also tested, but proved less effective than cotton.

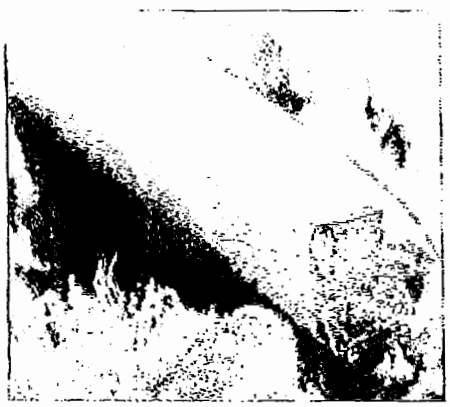
While these findings suggest that pesticides have a good chance of ending up in your body no matter what type of smoking device you use, they also show that certain devices and filters can help to minimize exposure.

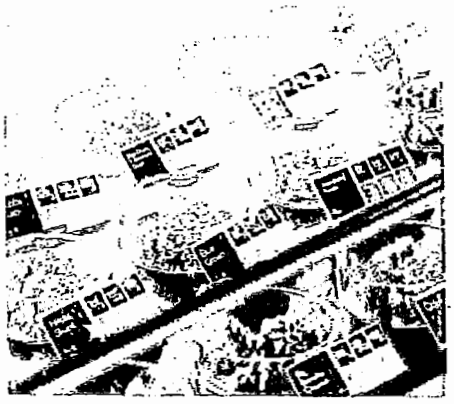
3.C

FAQs: Health Effects of Marijuana

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
- Hunger
- Dry mouth
- Red eyes
- Psychosis (rarely) — which is seeing or hearing things that aren't real

These effects typically last two to three hours after marijuana is smoked or inhaled. When marijuana is eaten, the effects take longer to start and may last four to 10 hours.

IS MARIJUANA ADDICTIVE?

Long-term marijuana use can, in some cases, lead to addiction, which means a person can't control or stop marijuana use even though it interferes with daily life.

According to the National Institute on Drug Abuse, about 9 percent of people who start using marijuana as an adult will become addicted. About 17 percent who start using marijuana between ages 13 and 25 will become addicted. And half of the people who use marijuana daily become addicted. Marijuana users make up 17 percent of the people that enter publicly-funded rehab programs.

This fact sheet was developed by the Colorado Department of Public Health and Environment.

Colorado Department of Public Health and Environment

For questions about marijuana and health, call (303) 692-2700 or e-mail cdphe_toxcall@state.co.u

FAQs: Health Effects of Marijuana

WHAT IS KNOWN ABOUT THE LONG-TERM HEALTH EFFECTS OF MARIJUANA?

Effects on Daily Life

Compared to other people, heavy marijuana users report:

- Less satisfaction with life
- Poor mental and physical health
- Relationship problems
- Less success at school or work

Cardiovascular Effects

Smoking marijuana makes the heart beat 20-100 percent faster. This increase can last up to three hours. Marijuana also can change heart rhythms. One study showed marijuana users are 4.8 times more likely to have a heart attack in the first hour after smoking. Older people and those with heart problems may be at greater risk for heart attack.

Respiratory Effects

Marijuana smoke irritates the lungs. Frequent marijuana smokers can have many of the same problems that tobacco smokers have, such as a daily cough, mucus, more chest colds and a higher risk of lung infections. One study found people who smoke marijuana frequently, but who don't smoke tobacco, have more health problems and miss more days of work than nonsmokers.

Lung Cancer

It isn't known if smoking marijuana causes lung cancer. Some of the cancer-causing chemicals in tobacco smoke are also in marijuana smoke. Marijuana smokers may inhale deeper and hold the smoke in their lungs longer. So, marijuana smokers' lungs may be exposed to more chemicals that can cause cancer. Lung tissue from regular marijuana users have shown signs of pre-cancerous changes. However, several studies have failed to show that marijuana smokers have a higher risk of lung cancer. More studies about marijuana smoking and lung cancer are needed.

Mental Health

A number of studies have shown a link between regular marijuana use and mental illness. High doses of marijuana can cause a temporary psychotic reaction (not knowing what is real, hallucinations and paranoia). Using marijuana can make people with schizophrenia worse. There are also links between marijuana use and other mental health problems, such as depression, anxiety, suicidal thoughts and personality disturbances, including a lack of interest in rewarding activities. More studies are needed to better understand these links.

Is marijuana more harmful to adolescents?

Doctors are most concerned about the effect of marijuana on children's and teenagers' growing brains. The earlier in life a person starts using marijuana, the more likely the person will become addicted.

Regular marijuana use among teens has been linked to social problems, learning and memory problems, and falling IQ scores. And these problems do not go away after marijuana use has stopped.

Marijuana use among teens also has been linked with more serious mental health issues such as psychosis and schizophrenia, especially among those with a family history of mental illness. The potential for depression and anxiety may also be higher among teen marijuana users.

FAQs: Health Effects of Marijuana

pg. 3 of 3

IS MARIJUANA SAFE FOR PREGNANT OR BREASTFEEDING MOMS?

As with alcohol and cigarettes, there likely is no "safe" amount of marijuana use during pregnancy. THC, the chemical in marijuana that makes a person "high," can pass from mother to the unborn child through the placenta. This means the unborn child is exposed to THC used by the mother. Smoking also passes carbon monoxide to the unborn child, which disrupts the oxygen supply and can result in growth issues, possible premature birth, miscarriage or stillbirth. There is some evidence marijuana use during pregnancy can result in babies with low birth weight, certain birth defects and symptoms similar to fetal alcohol syndrome. THC can also be passed from the mother's breast milk, potentially affecting the baby.

DOES MARIJUANA AFFECT THE ABILITY TO DRIVE?

Driving while impaired by any substance is illegal and unsafe. People under the influence of marijuana should not drive or operate machinery. Marijuana affects reaction time, memory, coordination, concentration and perception of time and distance. In Colorado, it is illegal to drive while impaired. It also is illegal to use or display marijuana on a public road, and to have marijuana in the passenger area of a vehicle (either in an open container or container with a broken seal).

IS SECONDHAND SMOKE FROM MARIJUANA DIFFERENT THAN OTHER SECONDHAND SMOKE?

Secondhand smoke from marijuana has many of the same chemicals as smoke from tobacco, including those linked to lung cancer. While more studies are needed, secondhand smoke from marijuana may increase the risk of lung cancer. Also, secondhand smoke from marijuana can cause lung irritation, asthma attacks, and make respiratory infections more likely. If you have children or non-users in your family or home, it is important to practice safer smoking behaviors, like not smoking indoors or in your car.

IS MEDICAL MARIJUANA DIFFERENT THAN REGULAR OR RECREATIONAL MARIJUANA?

There is no difference between marijuana sold for recreational and medical use. Recreational marijuana sellers use many of the same growers and kinds of marijuana as those for medical marijuana. There are a number of different kinds of marijuana, some of which have lower levels of THC and higher levels of other substances believed to help improve certain medical conditions.

Do I need to worry about chemicals, bacteria or mold in my marijuana?

There have been reports of marijuana being contaminated by mold, bacteria and pesticides. Some contamination issues have led to disease outbreaks and other health problems. The chemical process used to create marijuana products such as wax and hash oil is another area of concern.

Until new regulations come into effect in late 2014, Colorado retail marijuana is not required to be tested for contaminants. Some growers and sellers already have started to test their products for contamination. All marijuana products must have labels listing any chemicals that were used during growing or production, and whether the product has been tested for contaminants. Products that have not been tested for contaminants must be labeled as "not tested."

References and Resources:

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- Colorado Department of Transportation: www.coloradodot.info/programs/alcohol-and-impaired-driving/druggeddriving
- National Institute on Drug Abuse: www.drugabuse.gov/drugs-abuse/marijuana
- University of Washington, Alcohol and Drug Abuse Institute: learnaboutmarijuanawa.org
- Seattle, King County Public Health: www.kingcounty.gov/healthservices/health/marijuana.aspx
- National Cannabis Prevention and Information Centre (Australia): ncpic.org.au
- Denver Health: www.denverhealth.org/public-health-and-wellness/public-health/health-information-for-denver/common-public-health-problems/marijuana

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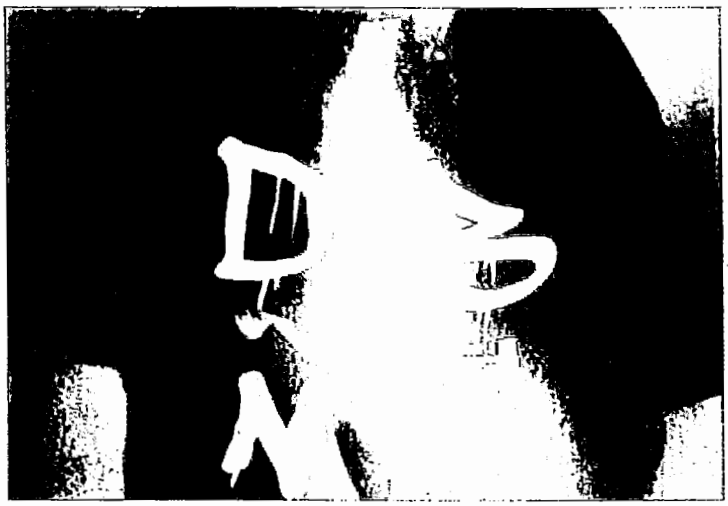
EXHIBIT

Butane hash oil: Dangers shadow the quick, powerful marijuana high



Medical marijuana patients, including Mason, who declined to give his last name, gathered one recent afternoon at the Alternative Wellness Club House, located at Southeast 72nd Avenue and Mitchell Street, to dab butane hash oil. Mason was at the club with his mother, Melanie, who referred to him as a "master dabber." "He can do one gram in one inhale," she said. "That's what's known as a master dabber." Dabbing

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Print (http://impact.oregonlive.com/marijuana/print.html?entry=/2014/05/butane_hash_oil_overview.html)

(http://connect.oregonlive.com/staff/ncrombie/index.html) By Noelle Crombie | ncrombie@oregonian.com (http://connect.oregonlive.com/staff/ncrombie/posts.html)
Email the author | Follow on Twitter (http://twitter.com/noellecrombie)
on May 12, 2014 at 9:04 AM, updated May 12, 2014 at 6:38 PM

One of the hottest products on medical marijuana dispensary shelves and on Craigslist is a potent hash oil often made at home with the help of DIY YouTube clips and canisters of butane.

Consumed by using discreet portable hash oil pens or water pipes heated with propane torches, butane hash oil is coveted for its quick and powerful high.

But that high can come with a cost: Butane-fueled blasts have sent 17 people to a Portland burn unit with serious injuries in the past 16 months, including one Northeast Portland man who later died from his injuries.

Growing demand for BHO -- which, according to one marijuana industry survey, accounts for about 17 percent of sales in Oregon medical marijuana dispensaries -- is met by an unregulated and largely underground industry that plays out in garages, basements and kitchens. A spark from something as ordinary as a refrigerator compressor can set off a fiery explosion.

BUTANE HASH OIL IN OREGON

The Oregonian's investigation of butane hash oil (http://www.oregonlive.com/marijuana

Definition of hash oil terms (http://www.oregonlive.com/marijuana

More coverage of marijuana in Oregon (http://www.oregonlive.com/marijuana

All Stories (http://topics.oregonlive.com/tag/butane-hash-oil/posts.html) | All Photos (http://topics.oregonlive.com/tag/butane-hash-oil/photos.html) | All Videos (http://topics.oregonlive.com/tag/butane-hash-oil/videos.html)

Using public records and news accounts, The Oregonian documented nine major BHO-related blasts in Oregon since 2011, four of them in homes or hotel rooms where children, including a newborn, were present. In one case last year, a 12-year-old girl suffered multiple broken bones after leaping from the second floor of a Medford apartment building rocked by a butane explosion.

"This is an issue nobody apparently has any will to address," said Bracken McKey, a senior deputy district attorney in Washington County, where three major BHO explosions have taken place since 2012. "It's no safer than manufacturing methamphetamine."

Medical marijuana patients, however, say BHO offers a quick and powerful relief unmatched by dried marijuana flowers.

Matthew Walstatter, a Portland medical marijuana patient who relies on BHO to treat a chronic gastrointestinal disorder, attended a party recently where people were using portable hash oil pens to consume the concentrated form of marijuana.

"Everybody had a (vaporizer) pen and nobody had any weed," said Walstatter, who owns Pure Green, a dispensary on Northeast Sandy Boulevard. "I know people who were heavy flower smokers and now they don't smoke flowers. All they smoke is BHO."

NEXT: "New methods to consume marijuana add to its allure" (http://www.oregonlive.com/marijuana/index.ssf/2014/05/butane_hash_oil_the_allure.html)

-- Noelle Crombie; news researcher Lynne Palombo contributed to this report

4.b
EXHIBIT

More marijuana users making butane hash oil; explosions in Colorado on the rise

Fires spark debate over law, safety

BY: Theresa Marchetta (mailto:theresa.marchetta@kmgh.com), Sandra Barry (mailto:sandra.barry@kmgh.com)
POSTED: 9:13 PM, May 6, 2014
UPDATED: 6:17 AM, May 7, 2014
TAG: denver (/topic/denver) | colorado (/topic/colorado) | keli rabon (/topic/keli+rabon) | call7 investigators (/topic/call7+investigators) | john ferrugia (/topic/john+ferrugia)

DENVER - Wayne Winkler said one mistake changed his life forever. He was making butane hash oil inside his home in 2012, as a favor for a friend. When he walked past the stove, the oil exploded in his hands.

"My hands literally melted off in one instant," Winkler said, "and I'm burning alive."

By the time Winkler managed to put out the flames consuming his body and his home, the damage was done.

"I had no skin on my fingers to even dial my phone," he said. "I just said, 'Oh, my God. What did I do? What did I do?'"

When Winkler arrived at the University of Colorado Hospital Burn Unit, he was the only patient there injured while making hash oil -- and only the third the unit had seen since 2010.

In 2013, the unit admitted 11 patients. So far in 2014, they've already treated ten.

Camy Boyle, Associate Nurse Manager in the hospital's burn unit, said the injuries are traumatic and life-changing.

"All of the burns are very deep," Boyle said. "The majority of them required some type

of surgical intervention."

Exponential increase

Colorado law enforcement is reporting the same exponential increase, from fewer than a dozen hash oil explosions in all of 2013, to more than 30 in just the first four months of 2014.

Sgt. Jim Gerhardt of the Colorado Drug Investigators Association believes that's just the beginning.

"I don't think that these problems are going to stop any time soon," Gerhardt said. "We're going to continue to see this for quite some time, unfortunately."

Since December 2013, hash oil explosions have been reported across metro Denver, including Longmont, Littleton, Thornton and Aurora. There were three in Denver in the space of a month. Each story has generated debate about how dangerous making hash oil really is.

The CALL7 Investigators asked Advanced Engineering Investigations to re-create the conditions being found in homes across the metro.

Forensic engineers agreed to demonstrate the dangers of making hash oil -- using butane inside a two-foot square plexi-glass box inside their facility. They told the CALL7 Investigators it may look easy to do, but it's not easy to do safely.

"If it's not done correctly, (it) can be extremely dangerous," said John Schumacher, vice president and principal engineer at Advanced Engineering Investigations.

Legal debate

The dangers around making butane hash oil aren't the only topic of debate. There's also disagreement about whether it's legal for people who aren't licensed to make it for personal use.

Gerhardt said according to his understanding of Amendment 64, it is.

"If a person damages somebody else's property through these explosions, then certain arson charges might apply. If you endanger a child, then that becomes a felony form of child abuse," he said. "But, beyond that, there's not a whole lot that really prevents people from doing this."

In Arapahoe County, though, the District Attorney is pursuing charges in several cases.

Winkler says whether making butane hash oil is legal or not, it isn't safe.

"Don't ever do this," he said. "I don't want anybody else getting burned up."

4.c
EXHIBIT

HASH OIL EXPLOSIONS RISE WITH LEGAL POT

SEPTEMBER 26, 2014 | EDITOR | 6 COMMENTS

Please share this post with every concerned parent you know! Spread the Word about Pop Pot!

Another consequence of changing a public policy to benefit the 6- 7% of adults who use marijuana is the slew of hash oil explosions which have occurred this year. Making BHO, butane hash oil is a relatively easy, but dangerous, process.

Did anyone figure ambulances, fire fighters and emergency medical care into the cost of legalizing marijuana? Voters in Oregon, Alaska, Washington, DC, and two cities, Lewiston and South Portland, Maine, need to think of possible consequences before legalizing another dangerous drug. States considering medical marijuana also need to factor in the legality of making BHO, and the cost for public services when the fires occur.

Denver Mayor Michael Hancock called a meeting last week to pass **an ordinance** that would restrict unlicensed amateurs using flammables to process marijuana. There have been 8 blasts in the city of Denver this year, and 31 in the state. After an **objection** was voiced at the meeting on September 15, the discussion was tabled.

Congress made a huge mistake, when on May 30, the House of Representatives voted not to allow Drug Enforcement Administration (DEA) funds to be used to investigate federal violations in **states with medical marijuana**.

Like **passing child protection laws**, or keeping the marijuana businesses out of communities, it seems impossible to pass any restrictions which might stop marijuana consumption, commerce or expansion in Colorado. (Marijuana has caused three non-traffic deaths in Colorado this year: one incidence of **child neglect in January** and two deaths from potent edibles, in **March** and **April**.)

The marijuana industry told voters mariju-

cohol," but the social and public service costs must be staggering by now. The fires and explosions are increasing, because extracting hash oil from marijuana has become more popular. The **promised tax revenues** from marijuana are much lower than was projected, and black markets still thrive.

Firefighters putting out a hash oil explosion in Jefferson County, Colorado. ***Photo: CBS Denver***

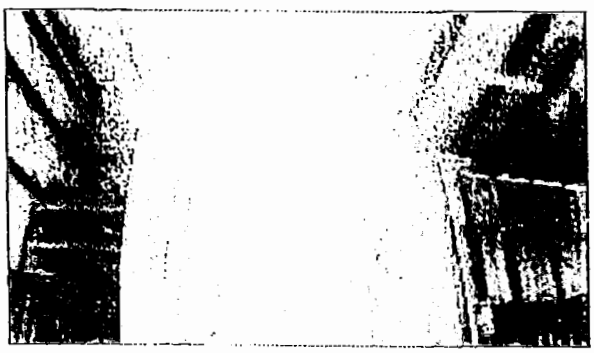
Seared Skin and Burn Centers

"Hash Oil's Trail of Seared Skin and Annihilated Homes" reports of one death in Hawaii early this year and one death in Oregon last year. **"March Madness"** was a term used to describe the numerous hash oil blasts that took place during one month this year. Five explosions happened in Colorado during one week in April.

Butane hash oil must be made in an open or well-ventilated area. If the butane sparks something else, explosions can occur. What makes it dangerous is that butane is highly flammable, sensitive to heaters, pilot lights, electric cords, a cigarette or the slightest spark of a match.

Of the 31 hash oil explosions that had occurred in Colorado by early May this year, 21 involved injuries and 10 of those suffered from major burns requiring extensive treatment. In the previous year, there were 11 such explosions in the state, with **11 people treated for burns.** According to an official of the state's burn center, at University of Colorado's burn unit, the **first explosion** occurred in 2012. Most victims are males in their 20s and 30s.

A **request to search the records** of Oregon's only **burn center** over a 16- month period showed that 17 people were treated for butane **hash oil burns**, including two residents of southwest Washington. A 12-year old girl sustained broken bones after jumping from the 2nd **floor, to escape a Medford, Oregon, hash**



In California, during a 14-month period from 2013 to early 2014, 27 people were treated for hash oil burns in one Northern California burn unit, 17 in southern California centers. In California, it's legal for medical marijuana patients to use or buy the hash oil, but illegal for amateurs to make it. We have written previously of the children endangered by theses blasts.

Fortunately, no one has died in Colorado from BHO-explosions, though some people have sustained horrible burns.

As far as state law goes, making the hash oil in a home is perfectly legal in Colorado, as reported on ABC7 News. Charges of arson or child endangerment can be filed, however, when there is property damage, others are put in danger, or children are nearby.

Homes, Apartments and Property Damage

A hash oil explosion at a Bellevue apartment complex fire caused one death to a former mayor and $1.5 million in damages. Photo above and below: US District Court of Western Washington

Federal District Attorneys in Washington, California and Oregon have been excessively slow in response to the explosions, despite the extensive damage to property, deaths and injuries to others. The explosions began 2-3 years ago on the West Coast, but it is only in the last few

Last weekend the Los Angelos Times reported 20 butane hash oil explosions in San Diego County, alone, within the year. There was $1.2 million of damage to an an apartment building in San Diego last January. The explosions have occurred from New England to Florida, and from to British Columbia to Arizona.

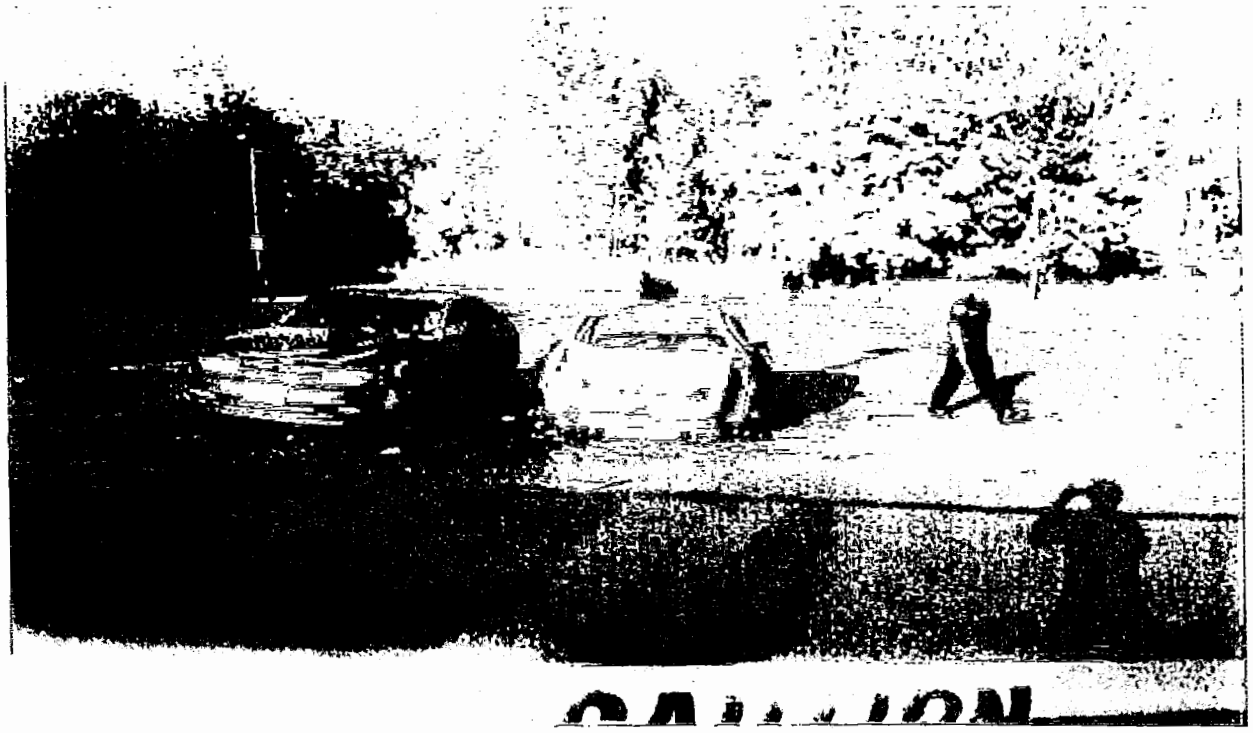
In May, the Oregonian ran a series of online articles about BHO (butane hash oil), detailing the hows and whys of making it, and the explosions. It has only become popular in the last 3 years.

The fire at Bellevue apartment complex resulted in severe injuries to those who had to jump, and one woman who died. Three men have been charged for the incident of Nov. 5, 2013.

On July 22, 2014, the US attorney in western Washington filed charges against seven people, mainly for "endangering human life while manufacturing controlled substances." The individuals caused fires or explosions in Seattle, Puyallup, Kirkland and Bellevue. The Bellevue fire caused a massive explosion to an apartment complex, $1.5 million in damages, and killed a former mayor of Bellevue. During this occurrence, two women experienced multiple fractures, having jumped from second- and third-floor windows to escape flames.

One of those facing federal charges in Puyallup, Washington, was making the hash oil for a marijuana edibles. He's the owner of an edibles' company, "Capn Cosmics." Additionally, he's charged with endangering the life of a 14-month old child.

The District Attorney in Washington asserts that the actions are illegal, because they cause harm to others and to property, although in the past officials found issues of legality hazy in Colorado, Washington and Oregon.



A California many has been indicted for starting the BHO blast in a Tigard, Oregon, parking lot on July 29. Photo: KoinTV

On July 29 in Tigard, Oregon, a parking lot explosion injured one and destroyed or damaged five motor vehicles. A grand jury indicted a California man for knowingly and intentionally creating a substantial risk of harm to human life in connection materials exploded, and for manufacturing marijuana. It's thought to be the first time the U.S. Attorney's Office in Oregon has filed charges in connection with a hash oil explosion.

State regulations in California and Colorado haven't stopped the explosions. California doesn't allow medi-pot patients to produce BHO, while Oregon and Washington's medical pot programs don't regulate BHO. Colorado and Washington require BHO to be tested for residual butane before being placed on dispensary shelves.

Marijuana users are looking for the quicker, faster high—even though they think marijuana is not addictive. Yet, there are great psychological risks, too, and some users have had psychotic episodes from using this potent substance.

For sellers, it's an easy way to make large profits. However, making it at home is so much cheaper, and it's gaining popularity.

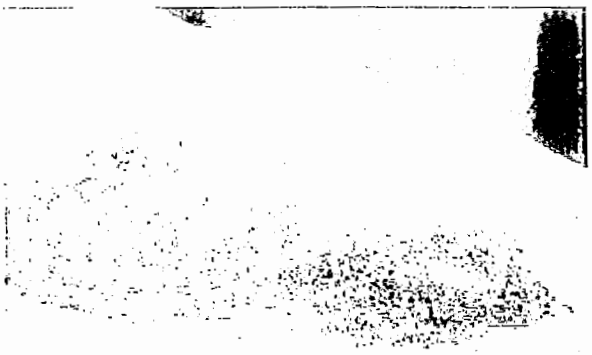
There are plenty of YouTube videos and other online instructions for amateurs to follow. Makers begin by putting cannabis leaves and flowers in an extraction tube, like a pipe. They then put the colorless, odorless butane in that small area to extract the THC quickly, letting it fall through a small filter on bottom. Spraying with butane is called blasting the marijuana, which pulls the THC right out of it.

Problems are most likely to occur indoors or when there is not good ventilation.

*A butane hash "chef" packs a pipe with marijuana trimmings that will be used to make butane hash. (Photo: Genaro Molina/**Los Angeles Times**)*

The solvent or butane must be flushed out. It can be boiled off in a hot water bath, which is why some home producers use hot baths or double boilers. Many commercial enterprises have the butane pumped out with a vacuum vacuum chamber to lower butane's boiling point, pulling butane from the oil.

The result is a hash oil which looks like honey. It's like the crack cocaine of marijuana. The THC content can be 70 to 85 percent, while the average joint may be 20 to 25 percent THC. After cooling, the oil hardens and is broken into bits. Sometimes the explosions occur in the cooling process, as when the refrigerator door blew off in **Manitou Springs**



Butane has oil, distillation of marijuana, is so potent that a single hit can last more than a day. ***(Photo: ABC News)***

There are many nicknames for butane hash oil: "Wax," "Honey oil," "earwax," "dabs" "shatter" and more. It could be smoked, vaped or infused into the edibles. **Vaping is a concern, since the vape pens are the e-cigarettes of marijuana. It is a way that teens may be using marijuana without detection.**

In short, hash oil offers a quick and lasting high for users. A single hit can last more than a day. By making it, it costs a user about 50% less than it would by buying it from a licensed dispensary or maker.

Parents Opposed to Pot is a non-partisan grassroots campaign started by parents concerned about the commercial pot industry and its devastating impact on youth and communities. We write anonymously to explore these important issues and protect the privacy of our bloggers. We are totally funded by private donations, rather than industry or government. If you have an article to submit, or want to support us, please go to **Contact** *or* **Donate** *page.*

ABC NEWS | BELLEVUE | BHO | BUTANE HASH OIL | COLORADO | DABS | EARWAX | HASH OIL EXPLOSIONS | HOME | HONEY OIL | JEFFERSON COUNTY | LEWISTON | LOS ANGELES TIMES | MAINE | MANITOU SPRINGS | MEDFORD | OREGON | PUYALLUP | SAN DIEGO COUNTY | SHATTER | SOUTH PORTLAND | TIGARD | WASHINGTON

Two injured in hash oil explosion inside gas station bathroom

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EXHIBIT

Max Barry, KGW.com Staff *5:33 a.m. PST November 24, 2014*

(Photo: Tualatin Valley Fire & Rescue)

TIGARD, Ore. – Two men were injured in a hash oil explosion inside a convenience store bathroom early Sunday morning, fire investigators said.

The men were trying to extract hash oil from marijuana using butane gas when they caused an explosion and fire at the 76 station located at 10775 S.W. Greenburg Road.

Tigard police identified the duo as 18-year-old Dennis Tapia and 23-year-old Jose Rios.

Both men suffered severe burns. They drove themselves to a hospital but were later taken to the Legacy Oregon Burn Center, firefighters said.

The fire spread through a false ceiling and was threatening the gas station's convenience store, firefighters said, but crews put it out within a few minutes of arriving at the scene.

The bathroom was damaged by the explosion. The convenience store had some smoke damage.

"The process of extracting hash oil is very dangerous," said Tualatin Valley Fire and Rescue Investigator Jason Arn.

Tigard police told KGW the men have not been charged with a crime at this time, due to their medical conditions.

The explosion occurred just before 2 a.m. Sunday. *(Photo: Tualatin Valley Fire & Rescue)*

Read or Share this story: http://www.kgw.com/story/news/local/2014/11/23/hash-oil-explosion-gas-station-bathroom/19455345/

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Is Pot-Growing Bad for the Environment?

Thanks to the drug's illegal status, marijuana farms are not regulated—with serious costs to water and wildlife.

Seth Zuckerman October 31, 2013

As cannabis production has ramped up in Northern California to meet the demand for medical and black-market marijuana, the ecological impacts of its cultivation have ballooned. From shrunken, muddy streams to rivers choked with algae and wild lands tainted with chemical poisons, large-scale cannabis agriculture is emerging as a significant threat to the victories that have been won in the region to protect wilderness, keep toxic chemicals out of the environment, and rebuild salmon runs that had once provided the backbone of a coast-wide fishing industry.

About the Author

Seth Zuckerman
Seth Zuckerman's writings have appeared in Orion, Sierra and High Country News, among other publications. He...

Also by the Author

Environmentalism Turns 16
(Activism, Environmental Activism, From the Archive, Environment)

Ask Brock Evans, Washington lobbyist for the Audubon Society, what he thinks of the lie-down-in-front-of-the-bulldozer approach to "environmentalism practiced by Earth First!, and he scoffs, "I want to know how many acres they've saved in the last few years." Earth First! founder Dave Foreman's response is, many acres have they given away?" In the sixteen years since the first Earth Day, the most prominent environmental groups have become more savy and more pragmatic politically as they have blended into the Washington landscape.

Seth Zuckerman

River advocate Scott Greacen has spent most of his career fighting dams and the timber industry, but now he's widened his focus to include the costs of reckless marijuana growing. Last year was a time of region-wide rebound for threatened salmon runs, but one of his colleagues walked his neighborhood creek and sent a downbeat report that only a few spawning fish had returned. Even more alarming was the condition of the creek bed: coated with silt and mud, a sign that the water quality in this stream was going downhill.

"The problem with the weed industry is that its impacts are severe, it's not effectively regulated, and it's growing so rapidly," says Greacen, executive director of Friends of the Eel River, which runs through the heart of the marijuana belt.

That lack of regulation sets marijuana's impacts apart from those that stem from legal farming or logging, yet the 76-year-old federal prohibition on cannabis has thwarted attempts to hold its production to any kind of environmental standard. As a result, the ecological impact of an ounce of pot varies tremendously, depending on whether it was produced by squatters in national forests, hydroponic operators in homes and warehouses, industrial-scale operations on private land, or conscientious mom-and-pop farmers. Consumers could exert market power through their choices, if only they had a reliable, widely accepted certification

program, like the ones that guarantee the integrity of organic agriculture. But thanks to the prohibition on pot, no such certification program exists for cannabis products.

To understand how raising some dried flowers—the prized part of the cannabis plant—can damage the local ecosystem, you first have to grasp the skyrocketing scale of backwoods agriculture on the redwood coast. Last fall, Scott Bauer of the California Department of Fish and Wildlife turned a mapping crew loose on satellite photos of two adjoining creeks. In the Staten Island–sized area that drains into those streams, his team identified more than 1,000 cannabis farms, estimated to produce some 40,000 small-tree-sized plants annually. Bauer holds up the maps, where each greenhouse is marked in blue and each outdoor marijuana garden in red, with dots that correspond to the size of the operation. It looks like the landscape has a severe case of Technicolor acne.

"In the last couple of years, the increase has been exponential," Bauer says. "On the screen, you can toggle back and forth between the 2010 aerial photo and the one from 2012. Where there had been one or two sites, now there are ten."

Each of those sites represents industrial development in a mostly wild landscape, with the hilly terrain flattened and cleared. "When someone shaves off a mountaintop and sets a facility on it," Bauer says, "that's never changing. The topsoil is gone." The displaced soil is then spread by bulldozer to build up a larger flat pad for greenhouses and other farm buildings. But heavy winter rains wash some of the soil into streams, Bauer explains, where it sullies the salmon's spawning gravels and fills in the pools where salmon fry spend the summer. Ironically, these are the very impacts that resulted from the worst logging practices of the last century.

"We got logging to the point that the rules are pretty tight," Bauer says, "and now there's this whole new industry where nobody has any idea what they're doing. You see guys building roads who have never even used a Cat [Caterpillar tractor]. We're going backwards."

Then there's irrigation. A hefty cannabis plant needs several gallons of water per day in the rainless summer growing season, which doesn't sound like much until you multiply it by thousands of plants and consider that many of the streams in the area naturally dwindle each August and September. In the summer of 2012, the two creeks that Bauer's team mapped got so low that they turned into a series of disconnected pools with no water flowing between them, trapping the young fish in shrinking ponds. "It's a serious issue for the coho salmon," Bauer says. "How is this species going to recover if there's no water?"

The effects extend beyond salmon. During several law enforcement raids last year, Bauer surveyed the creeks supplying marijuana farms to document the environmental violations occurring there. Each time, he says, he found a sensitive salamander species above the grower's water intakes, but none below them, where the irrigation pipes had left little water in the creek. On one of these raids, he chastised the grower, who was camped out onsite and hailed from the East Coast, new to the four- to six-month dry season that comes with California's Mediterranean climate. "I told him, 'You're taking most of the flow, man,' " Bauer recalls. "'It's just a little tiny creek, and you've got three other growers downstream. If you're all taking 20 or 30 percent, pretty soon there's nothing left for the fish.' So he says, 'I didn't think about that.' "

While some growers raise their pot organically, many do not. "Once you get to a certain scale, it's really hard to operate in a sustainable way," Greacen says. "Among other things, you've got a monoculture, and monocultures invite pests." Spider mites turn out to be a particular challenge for greenhouse growers. Tony Silvaggio, a lecturer at Humboldt State University and a scholar at the campus's year-old Humboldt Institute for Interdisciplinary Marijuana Research, found that potent poisons such as Avid and Floramite are sold in small vials under the counter at grower supply stores, in defiance of a state law that requires they be sold only to holders of a pesticide applicator's license. Nor are just the workers at risk: the miticides have been tested for use on decorative plants, but not for their impacts if smoked. Otherwise ecologically minded growers can be driven to spray with commercial pesticides, Silvaggio has found in his research. "After you've worked for months, if you have an outbreak of mites in your last few weeks when the buds are going, you've got to do something—otherwise you lose everything," he says.

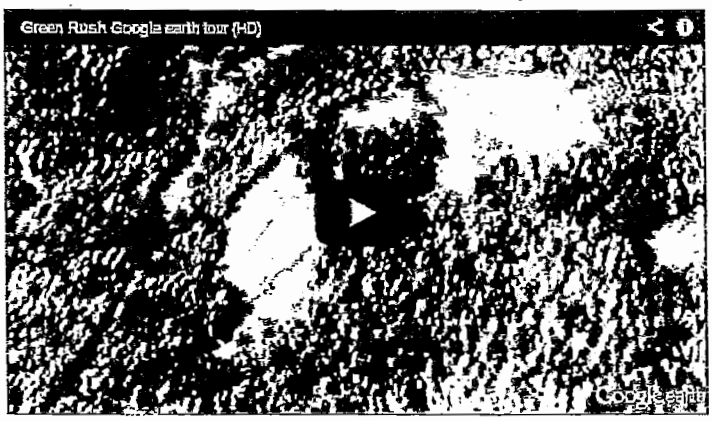
Outdoor growers face another threat: rats, which are drawn to the aromatic, sticky foliage of the cannabis plant. Raids at growing sites typically find packages of the long-acting rodent poison warfarin, which has begun making its way up the food chain to predators such as the rare, weasel-like fisher. A study last year in the online scientific journal PLOS One found that

more than 70 percent of fishers have rat poison in their bloodstream, and attributed four fisher deaths to internal bleeding triggered by the poison they absorbed through their prey. Deep in the back-country, Silvaggio says, growers shoot or poison bears to keep them from raiding their encampments.

The final blow to environmental health from outdoor growing comes from fertilizers. Growers dump their used potting soil, enriched with unabsorbed fertilizers, in places where it washes into nearby streams and is suspected of triggering blooms of toxic algae. The deaths of four dogs on Eel River tributaries have been linked to the algae, which the dogs ingest after swimming in the river and then licking their fur.

The cannabis industry—or what Silvaggio calls the "marijuana-industrial complex"—has been building toward this collision with the environment ever since California voters approved Proposition 215 in 1996, legalizing the medicinal use of marijuana under state law. Seven years later, the legislature passed Senate Bill 420, which allows patients growing pot with a doctor's blessing to form collectives and sell their herbal remedy to fellow patients. Thus were born the storefront dispensaries, which grew so common that they came to outnumber Starbucks outlets in Los Angeles.

From the growers' point of view, a 100-plant operation no longer had to be hidden, because its existence couldn't be presumed illegal under state law. So most growers stopped hiding their plants in discreet back-country clearings or buried shipping containers and instead put them out in the open. As large grows became less risky, they proliferated—and so did their effects on the environment. Google Earth posted satellite photos taken in August 2012, when most outdoor pot gardens were nearing their peak. Working with Silvaggio, a graduate student identified large growing sites in the area, and posted a Google Earth flyover tour of the region that makes it clear that the two creeks Bauer's team studied are representative of the situation across the region.



With all of the disturbance from burgeoning backwoods marijuana gardens, it might seem that raising cannabis indoors would be the answer. ***Indoor growers can tap into municipal water supplies and don't have to clear land or build roads to farms on hilltop hideaways. But indoor growing is responsible instead for a more insidious brand of damage: an outsize carbon footprint to power the electric-intensive lights, fans and pumps that it takes to raise plants inside. A dining-table-size hydroponic unit yielding five one-pound crops per year would consume as much electricity as the average US home, according to a 2012 paper in the peer-reviewed journal Energy Policy. All told, the carbon footprint of a single gram of cannabis is the same as driving seventeen miles in a Honda Civic.*** In addition, says Kristin Nevedal, president of the Emerald Growers Association, ***"the tendency indoors is to lean toward chemical fertilizers, pesticides and fungicides to stabilize the man-made environment, because you don't have the natural beneficials that are found outdoors."***

Nevertheless, the appeal of indoor growing is strong, explains Sharon (not her real name), a single mother who used to raise marijuana in the sunshine but moved her operation indoors after she split up with her husband. Under her 3,000 watts of electric light, she raises numerous smaller plants in a space the size of two sheets of plywood, using far less physical effort than when she raised large plants outdoors. "It's a very mommy-friendly business that provides a dependable, year-round income," she says. Sharon harvests small batches of marijuana year-round, which fetch a few hundred dollars more per pound than outdoor-grown

cannabis because of consumers' preferences. Sharon's growing operation supports her and her teenage daughter in the rural area where she settled more than two decades ago.

Add up the energy used by indoor growers, from those on Sharon's scale to the converted warehouses favored by urban dispensaries, and the impact is significant—estimated at 3 percent of the state's total power bill, or the electricity consumed by 1 million homes. On a local level, indoor cannabis production is blocking climate stabilization efforts in the coastal city of Arcata, which aimed to cut its greenhouse gas emissions by 20 percent over twelve years. But during the first half of that period, while electricity consumption was flat or declining slightly statewide, Arcata's household electrical use grew by 25 percent. City staff traced the increase to more than 600 houses that were using at least triple the electricity of the average home—a level consistent with a commercial cannabis operation.

The city has borne other costs, too, besides simply missing its climate goals. Inexpertly wired grow houses catch fire, and the conversion of residential units to indoor hothouses has cut into the city's supply of affordable housing. Last November, city voters approved a stiff tax on jumbo electricity consumers. Now the city council is working with other Humboldt County local governments to pass a similar tax so that growers can't evade the fee simply by fleeing the city limits, says City Councilman Michael Winkler. "We don't want any place in Humboldt County to be a cheaper place to grow than any other. And since this is the Silicon Valley of marijuana growing, there are a lot of reasons why people would want to stay here if they're doing this," he says. "My goal is to make it expensive enough to get large-scale marijuana growing out of the neighborhoods."

A tax on excessive electricity use may seem like an indirect way of curbing household cannabis cultivation, but the city had to back away from its more direct approach—a zoning ordinance—when the federal government threatened to prosecute local officials throughout the state if they sanctioned an activity that is categorically forbidden under US law. Attempts in neighboring Mendocino County to issue permits to outdoor growers meeting environmental and public-safety standards were foiled when federal attorneys slapped county officials with similar warning—illustrating, yet again, the way prohibition sabotages efforts to reduce the industry's environmental damage.

Indeed, observers cite federal cannabis prohibition as the biggest impediment to curbing the impacts of marijuana cultivation, which continues to expand despite a decades-long federal policy of zero tolerance. "We don't have a set of best management practices for this industry, partly because of federal prohibition," says researcher Silvaggio. "If a grower comes to the county agricultural commissioner and asks, 'What are the practices I can use that can limit my impact?', the county ag guy says, 'I can't talk to you about that because we get federal money.'"

Faced with this dilemma, observers have proposed a spectrum of solutions. A group of patient-growers banded together as the Tea House Collective to make their low-impact farming methods a central part of their marketing to prospective members. "It's about knowing your local farmer, the way 'locavore' is overtaking organic food," says collective founder Charley Custer. Other growers tout peer pressure and education as a way to goad their fellow farmers to do better, and have put together **their own guide** to best practices.

Activist Greacen proposes tailoring the tactics to each style of cannabis farming. Cannabis farms on public land spread chemical fertilizers and poisons into wildlife strongholds and leave behind a mess because they have no long-term stake in the property. "It's a lot like other kinds of rogue industry, like gold mining in Brazil," Greacen says. "If we can't get the feds and the cops to mobilize at the scale we need, we may need to consider going out there with large numbers of people in the early spring, walking the most vulnerable places, and scaring these guys out."

At the other end of the spectrum, he adds, are "touchy-feely small-scale organic folks who just need some more water tanks" so they can capture their irrigation supply in the winter, when it's plentiful. In between, "you have this vast new industry of fairly large-scale operations on private lands," where progress is limited by the unyielding federal opposition to cannabis. "The fundamental thing we need is a shift in the stance of the US Attorneys," he says, "who have blocked efforts to regulate cultivation." This would allow local governments to set limits on the impact and scale of these operations, license those who agree to abide by the limits, and mow down plants at farms that refuse to get licensed.

Another approach comes from state Fish and Wildlife researcher Bauer, who wants cannabis farmers to know that he doesn't care what they're growing, only how they grow it. He's willing to consider permit applications for farmers to use water from local creeks so that his agency can regulate how much they take, at what time of year, and how to keep the pumps from sucking fish out of the streams along with the irrigation water. "We're not going to tell you that you can't do your project," Bauer says. "We're going to tell you the right way to do it."

As evidence that his agency is truly indifferent to the legality of the growers' trade, he recalls what happened last summer when his team searched cannabis farms for evidence of environmental violations. "I think people were shocked because we didn't touch a plant," he says. "They thought we were there to whack their crop." Instead, the growers were simply cited for illegal water diversion and dumping sediment into the creek. One of the raided farmers said he'd apply for a permit, Bauer says, but he never did.

That grower's reluctance to come under the umbrella of regulation illustrates one of the central problems in curbing cannabis's impacts: marijuana growing remains, at its roots, an underground enterprise practiced with an outlaw mind-set. Even though cannabis cultivation has flourished under the ambiguous auspices of California's medical marijuana laws, the people who are best placed to serve as watchdogs over environmental abuses in their remote areas still feel bound by a code of silence to protect each other from the law.

Sharon is one such person—and it isn't because she's happy with the growth of the marijuana business. The relatively large operations in her rural valley have brought noisy generators to the hills where she used to take quiet walks. "There's a buzz of industry now in my neighborhood," she laments. Even though her neighbors raise their cannabis under natural light, they rely on generators to power the fans ventilating their greenhouses and to supplement the natural light. Water has become a point of contention as well in late summer, when outdoor plants are at their thirstiest. Sharon shares a water supply with the adjoining properties, which has run dry repeatedly as a nearby family has scaled up its cannabis growing. When that happens, the handful of households who depend on that system have to wait until the creek gradually replenishes their tanks before they enjoy the convenience of running water again. But even so, Sharon couldn't imagine asking a government agency to intercede if her neighbors' water use exceeded legal limits. "The taboo is deeply embedded in me," she says. "I would be an N-A-R-C, and they would be justifiably angry with me."

These attitudes die hard, and they are rising to the surface as Humboldt County considers a local ordinance requiring cannabis growers to register with the county and meet minimal environmental standards or risk being deemed a nuisance. But a hearing on the ordinance drew a skeptical public. "Registration sounds to me like 'Come and turn yourself in,' " Bonnie Blackberry of the Civil Liberties Monitoring Project told the county supervisors last month. "It seems like that's asking an awful lot, and I'm not sure you're going to get a lot of people who will do that."

The cannabis boom shows no signs of slowing down. Its growth heightens the challenge of bringing the industry into the bright sunshine of environmental protection—not to mention occupational safety and health, farm labor, and payroll and income-tax laws. But that is likely to prove an impossible task so long as the message from Washington is that the right scale for cannabis farming is no farming at all.

5.b

Pot, Power & Pollution: The Overlooked Impacts of Marijuana Legalization on Utilities and the Environment

April 17, 2014

Last month, Washington issued its first license for a legal marijuana grow operation under Initiative 502 ("I-502"), the marijuana legalization measure adopted by Washington voters in November 2012. A wave of additional operations will follow, as about 2,800 producers have applied for licenses to grow marijuana. While the implications of I-502 for the criminal justice system, land use, taxation and many other issues have been widely debated, the potentially significant changes in electricity and water use that are likely to follow from I-502's implementation have received almost no scrutiny. Nor have the important implications for environmental protection. Given the stakes, Washington utilities and environmental regulators should pay close attention to I-502 and the ongoing process of implementing the initiative.

At the outset, it is important to understand that the United States already produces huge amounts of cannabis. Official estimates suggest that U.S. production was somewhere in the range of 10,000 to 24,000 metric tons in 2001, making it America's largest cash crop by value. A more recent study suggests that production may actually be far higher - 69,000 metric tons. Given that marijuana production generally remains illegal, these estimates are highly uncertain. But there is little doubt that, as marijuana production comes out of the shadows and into the realm of legitimate business, power and water utilities will need to confront a number of serious and complex issues.

Implications for Electric Utilities

For electric utilities, legalization is a major concern because cannabis production, which generally relies on energy-intensive indoor growing operations, uses huge amounts of electricity. One recent study estimates that marijuana production may account for as much as 1% of the nation's entire electric consumption, accounting for a total bill of approximately $6 billion. In California, the numbers are even higher. Marijuana production in that state is estimated to use 3% of all electricity consumed there, equivalent to 9% of all residential electricity use.

Legalization may have significant localized effects on electricity consumption. For example, following legalization of marijuana cultivation for medical purposes in California, residential electricity consumption in Humboldt County spiked, increasing by 50% on a per capita basis compared to other parts of the state. Scientists at the University of California recently estimated that if Washington's marijuana production, currently estimated to be about 160 metric tons per year, were moved indoors, the state's electricity consumption would increase by about 0.8%.
On the other hand, if legalization results in grow operations moving outside, electricity use could decline precipitously because indoor grow operations rely on energy-intensive lighting and climate control systems that would be unnecessary for outdoor operations.

Whether this will occur is uncertain because there is a perception among consumers -- discounted by experts -- that indoor-grown marijuana is more potent that marijuana grown outdoors. In addition, if growers remain in Western Washington, indoor production likely will be required because the damp climate encourages mold growth. Under regulations adopted by the Washington Liquor Control Board ("LCB"), which is charged with implementing I-502, marijuana must be tested for mold and, if the crop fails, it would be illegal to sell. On the other hand, some producers are considering outdoor marijuana plantations in Eastern Washington to take advantage of the drier, sunnier climate, which reduces mold risk.

Legalization also offers a number of opportunities for electric utilities. For example:

• Power Theft: Theft of electricity is rampant among illegal grow operations. In 2010, BC Hydro, the electric utility serving British Columbia, estimated that as much as $100 million worth of electricity was stolen by marijuana growers in the province. As these operations move into the realm of legitimacy, utilities can treat them as ordinary commercial or industrial customers, the incentives for electricity theft should be reduced and the costs borne by ordinary ratepayers for stolen electricity should also be reduced.

• Energy Conservation: As indoor grow operations are legitimized, electric utilities will be presented with some low-hanging fruit for their energy conservation programs. Such operations generally use extremely power-intensive High-Intensity Discharge or High-Pressure Sodium lights. These can be replaced with energy efficient models such as LED lights. LEDs can produce three times more light per watt of energy expended, and can also be "tuned" to emit light wavelengths important for plant production. Similarly, there are significant opportunities for energy conservation in the climate control and air filtration equipment used by grow operations. In addition, the choice of marijuana cultivars greatly affects energy intensity, with some strains requiring double the amount of energy to grow as other strains. A recent study suggests that energy intensities at indoor grow operations could be reduced by at least 75%. On this score, it is worth noting that energy costs currently account for about one-third of the

production costs of indoor-grown marijuana. If, as many experts predict, legalization results in falling prices, cannabis producers will face strong economic incentives to join in utility conservation efforts.

• Renewable Energy Incentives: Growers moving from the black market to the legitimate market are likely to face increased scrutiny from marijuana consumers as well as from environmental agencies. For example, the LCB's regulations require producers to disclose the types of pesticides used on their crops. There may also be a market demand for marijuana grown using renewable energy, especially if other policies discourage carbon-intensive production methods. If so, this may create a new market for renewable energy and Renewable Energy Credits.

• Time-of-Use Rates: Although the effectiveness of such efforts may be limited by the specific demands of growing marijuana, it may be possible to adopt time-of-use rates that encouraging indoor grow operations to use energy-intensive light during night-time low-load hours, thus reducing peak demands.

Implications for Water Use

Water utilities and irrigation districts should also pay attention to the process of legalizing marijuana in Washington. In addition to being heavy energy users, indoor grow operations also use huge amounts of water, especially if the operation uses hydroponics. One recent estimate suggests that a one-room hydroponic operation may require as much as 151 liters of water per day, equivalent to application of nearly 100 inches of water per year. Often, water discharged from indoor operations carries heavy nutrient and pesticide loads, of potential concern for wastewater utilities. Illegal operations frequently steal fresh water and illegal dump wastewater, and legalization therefore represents an opportunity to curb these practices.

Even when grown outdoors, marijuana is a water-intensive crop. Experts suggest that marijuana grown outdoors has water needs similar to water-intensive crops such as hops and corn. Not surprisingly, illegal growers pay little heed to legal requirements for water diversions. Illegal diversions can severely reduce water flows where marijuana cultivation is common. For example, recent reports indicate that illegal diversions for marijuana farms have dewatered northern California streams, making the bad effects of its severe drought even worse. Such practices have serious implications for legitimate water users downstream, as well as fisheries and other water-dependent resources. Legalization should reduce this form of illegality, and may reduce pressure in Washington watersheds that are already bumping up against limits on diversions, even on the relatively moist west side of the state.

Implications for Environmental Protection

Contrary to the stereotype of marijuana growers as genial and environmentally-conscious hippies, illegal marijuana growers are often heavily-armed and operate with little or no regard for the environmental impacts of their operations. A growing body of evidence demonstrates that illegal marijuana operations often use extremely heavy doses of pesticides and rodenticides, far above what would be allowed for legitimate agricultural enterprises. In addition, labeling, storage, use, and disposal restrictions and other regulations aimed at reducing the environmental and human health impacts of pesticide use are often ignored. Illegal operations have many other environmental impacts. For example, thousands of "trespass" operations, illegally occupying sites on National Forests and other public lands, especially in California, have cropped up in recent years. Often, these operations are associated with illegal clearing of forests and severe damage to other public resources such as streams, lakes, and soils. Illegal operations in remote locations often rely on heavily-polluting diesel generators for power. Indoor grow operations relying on diesel generators may require 70 to 140 gallons of diesel fuel to produce a single plant.

Greenhouse gas emissions associated with illegal marijuana production provide a good proxy for its total environmental impacts. One recent analysis suggests that U.S. marijuana operations produce about 15 million metric tons of carbon dioxide, equivalent to the emissions of three million average automobiles.

Moving these illegal operations out of the shadows should help reduce these environmental impacts. Legal growers will have to comply with environmental regulations in the same manner as operators in other legal industries. In addition, specific regulatory requirements may increase the incentives for legalized growers to reduce their environmental impacts. For example, as noted above, the LCB's draft regulations require growers to disclose information about pesticide use, creating an incentive to reduce that use. Similarly, some commentators propose a specific tax on carbon-intensive grow operations, which would create incentives to reduce energy intensity and switch to low-carbon or carbon-free energy sources. Already, the LCB, which originally proposed to allow only indoor production, has revised its regulations to allow for outdoor production in response to comments about the carbon footprint associated with indoor production,

Navigating the Legal Netherworld

Although marijuana production in Washington is slowly moving out of the shadows as the LCB finalizes its regulations and begins licensing growers, it remains illegal under the federal Controlled Substances Act. These differences in marijuana's legal status create a number of potentially serious pitfalls for providers of services to marijuana growers, including utilities and irrigation districts. Any involvement with the federal government presents possible problems.

Of potentially greatest concern, banking transactions with marijuana growers are technically illegal under federal law. The U.S. Department of Justice has issued guidance to local prosecutors that creates some legal space for utilities to accept, for example, checks or electronic deposits from marijuana operations, but that guidance does not eliminate legal risk. For example, if the next Administration is less tolerant of Washington's legalization experiment, the guidance could be withdrawn.

Marijuana's clouded legal status under federal law may create additional problems for electric and water service providers that have received little attention. For example, irrigation districts in Eastern Washington the rely on water delivered from federal projects operated by the Bureau of Reclamation are seeking guidance from the agency on whether they may legally use water from Reclamation projects to supply marijuana growers. Similar problems may arise from electric utilities who receive power from the federal Bonneville Power Administration.

Local agencies that receive federal funding of any kind face the potential loss of those funds. For this reason, some Washington cities and counties hesitated to adopt zoning regulations allowing for legalized marijuana production. The breadth of this concern is demonstrated by the fact that the that the FBI only recently agreed to conduct the criminal background checks requested by the LCB on applicants for licensed marijuana production facilities. The first licenses have therefore been issued without the required criminal background checks.

Conclusion

To date, the debate about I-502 has focused primarily on how it will affect criminal justice system, land use, and taxation. Little attention has been paid to how legalized operations will be supplied with electricity, water, and sewage services. It is clear, however, that legalization will equip utilities with new tools to address chronic problems like power theft and illegal water diversions, as well as new opportunities to advance priorities like energy conservation. At the same time, because marijuana is illegal under federal law, with the same status as hard drugs like heroin and cocaine, legalization creates a new set of legal risks for utility service providers.

If you have any questions about I-502, the Washington Liquor Control Board, or the legal risks associated with marijuana production in Washington, please contact Senior Associate Ryan Espegard. Ryan, who contributed heavily to this post, is recognized as one of Washington's leading experts on I-502. If you have any questions about water, energy, or the implications of I-502 on utilities and the environment, please contact a member of GTH's Energy, Telecommunications, and Utilities or Environment & Natural Resources practice groups. We're proud that our partner Jim Waldo was recently named 2013 Lawyer of the Year for Energy and Natural Resources Law, and practice group members Don Cohen, Bill Lynn, and Brad Jones were all named among Seattle's Best Lawyers.

Agenda Item 4.a.
Office Use Only

CITY of LA GRANDE

COUNCIL ACTION FORM

Council Meeting Date: **April 6, 2015**

PRESENTER: Michael Boquist, City Planner

COUNCIL ACTION: **CONSIDER RESOLUTION ADOPTING A MARIJUANA MORATORIUM CORRECTION PROGRAM**

1. MAYOR: Open the Public Hearing and ask the City Recorder to read the Rules of Order in their entirety.
2. MAYOR: Request Staff Report
3. MAYOR: Invite Public Testimony in Favor, in Opposition, Neutral to the proposed Resolution and then Rebuttal Testimony.
4. MAYOR: Invite Council Discussion.
5. MAYOR: Entertain Motion

   SUGGESTED MOTION: I move that the proposed Resolution Adopting a Marijuana Moratorium Correction Program be read by title only, put to a vote, and passed.
6. MAYOR: Invite Additional Council Discussion.
7. MAYOR: Ask the City Recorder to Read the Proposed Resolution by Title Only.
8. MAYOR: Ask for the Vote

****

EXPLANATION: During the Regular Session of January 14, 2015, the City Council adopted Ordinance 3219, Series, 2015, declaring a moratorium prohibiting the establishment and operation of any new marijuana facilities and the expansion of any existing facilities in any area within the City Limits of the City of La Grande

ORS 197.530 requires that the City "*adopt a program to correct the problem creating the moratorium*" within sixty (60) days from the effective date of the Moratorium Ordinance. The sixty (60) day time limit expires on April 14, 2015

On April 6, 2015, prior to the Special Session of the City Council, the Council held a Work Session to discuss the marijuana moratorium and the development of a Marijuana Moratorium Correction Program, which is attached as Exhibit A of the proposed Resolution. The Correction Program outlines a schedule of events that include public meetings, the development of proposed land use regulations governing marijuana facilities and the adoption of such regulations with Public Hearings beginning in November 2015.

The City Manager recommends Council passage of this proposed Resolution.

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Reviewed By: (Initial)
City Manager ____
City Recorder ____
Aquatics Division ____
Building Division ____
CED Department ____
Finance/Human Resources Department ____
Fire Department ____
Library ____
Parks Department ____
Planning Division ____
Police Department ____
Public Works Department ____

COUNCIL ACTION (Office Use Only)
☐ Ordinance Adopted
First Reading: _____
Second Reading: _____
Effective Date: _____

☐ Resolution Passed
Effective Date: _____

☐ Motion Passed
☐ Motion Failed
☐ Action Tabled: _____
Vote: _____

Recessed: _____
Work Session: _____
Other: _____

CITY OF LA GRANDE
RESOLUTION NUMBER 4697
SERIES 2015

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LA GRANDE, COUNTY OF UNION, OREGON, ADOPTING A MARIJUANA MORATORIUM CORRECTON PROGRAM

WHEREAS, on January 14, 2015, pursuant to ORS 197.520, the City of La Grande City Council adopted Ordinance 3219, Series 2015, declaring a moratorium prohibiting the establishment and operation of any new marijuana facilities and the expansion of any existing facilities in any area within the City Limits of the City of La Grande, Union County, Oregon; and.

WHEREAS, Ordinance 3219, Series 2015, became effective on February 13, 2015, and pursuant to ORS 197.530, within sixty (60) days from the effective date, by April 14, 2015, the City is required to *"adopt a program to correct the problem creating the moratorium;" and,*

WHEREAS, on April 6, 2015, the City of La Grande City Council held a Work Session to discuss the Marijuana Moratorium Correction Program, as provided in Exhibit A, a copy which is attached hereto, and a consensus was reached to proceed with holding a Public Hearing to consider the adoption of the Correction Program.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of La Grande, Union County, Oregon, that:

The Marijuana Moratorium Correction Program, as provided in Exhibit A, a copy of which is attached hereto, shall be and hereby is adopted for the purposes of correcting the problem creating the moratorium.

PASSED and EFFECTIVE ON this Sixth (6th) day of April, 2015, by Six (6) of Six (6) Councilors present and voting in the affirmative.

Stephen E. Clements, Mayor

Gary Lillard, Mayor Pro Tem

Absent
John Bozarth, Councilor

Wayne Brown, Councilor

John Lackey, Councilor

Troy Pointer, Councilor

Justin Rock, Councilor

ATTEST:

Angelika N. Brooks
City Recorder

CITY of LA GRANDE
THE HUB OF NORTHEASTERN OREGON

MARIJUANA MORATORIUM CORRECTION PROGRAM

EXHIBIT A

Community & Economic Development Department / Planning Division

On January 14, 2015, pursuant to ORS 197.520, the City of La Grande City Council adopted Ordinance Number 3219, Series 2015, declaring a moratorium on marijuana facilities within the City Limits of the City of La Grande. The moratorium prohibits the establishment and operation of any new marijuana facilities and the expansion of any existing facilities which includes facilities that grow, test, dispense or otherwise distribute marijuana pursuant to any provision of Oregon law.

The City of La Grande currently has land use regulations governing the location of medical and recreational marijuana facilities, but does not have adopted regulations addressing grow sites, manufacturing facilities, testing facilities or adequate regulatory provisions to address the potential adverse impacts that such sites and facilities may generate. For this reason, the City Council has determined it to be in the best interest of the health, safety and welfare of the citizens of La Grande to enact this moratorium.

PURPOSE

The purpose of this Correction Program is to provide a structured process that will result in a timely resolution to the issues that justified the need for the moratorium. The process will include a citizen involvement component that consists of public workshops with citizens, work sessions with public officials, and a series of public hearings for the adoption of new regulatory provisions.

CORRECTION PROGRAM SCHEDULE

April-May 2015:	Research and develop a draft outline of issues and prepare public meeting presentation materials.
April 6, 2015:	Public Hearing with the City of La Grande City Council *(Action: Ord. First Reading, extending moratorium 6 months, to December 13, 2015.)*
May 6, 2015:	Public Hearing with the City of La Grande City Council *(Action: Ord. Second Reading, extending moratorium 6 months, to December 13, 2015.)*
June-Dec 2015:	Public Workshop(s) with citizens. This may require more than one meeting to develop proposed regulations.
Dec 2015-Jan 2016:	Work Session(s) with the City of La Grande Planning Commission, City of La Grande Council, Union County Planning Commission and Union County Board of Commissioners.
February 2016:	Finalize revisions, DLCD Notice, Measure 56 Notice.
April 2016:	Public Hearing with the City of La Grande Planning Commission *(Action: Make recommendations to the City Council on proposed regulations.)*
May 2016:	Public Hearing with the City of La Grande City Council *(Action: Ord. First Reading, extending moratorium 6 months, to June 13, 2016.)*
June 2016:	Public Hearing with the City of La Grande City Council *(Action: Ord. Second Reading, extending moratorium 6 months, to June 13, 2016.)* *(Action: Public Hearing and First Reading of adopting Ordinance.)*
July 2016:	Public Hearing with the City of La Grande City Council *(Action: Public Hearing and Second Reading of adopting Ordinance.)*
August 2016:	Public Hearing with the Union County Planning Commission *(Action: Make recommendation to the Union County Board of Commissioners.)*
September 2016:	Public Hearing with the Union County Board of Commissioners