

Hazards of illicit cannabis cultivation for police officers in Belgium

Vse pravice so pridržane. Gradiva ni dovoljeno razmnoževati in razpošiljati v kakršnikoli obliki brez predhodnega pisnega dovoljenja avtorja in Ministrstva za delo, družino, socialne zadeve in enake možnosti. Citiranje je v skladu z Zakonom o avtorskih in sorodnih pravicah, dovoljeno z navedbo podatkov o viru.

INTERNATIONAL CONFERENCE
“SAFE AND HEALTHY WORKPLACES IN THE POLICE FORCE”
29 May 2019

Piet RECOUR, First Chief Superintendent of Police,
Head of the Department of Occupational Safety
Federal Police (Belgium)



Outline

Introduction

HILCAN

Risks
&
Results

Lessons
learned

Conclusion

Introduction

International Conference « Safe and Healthy Workplaces in the Police Force »

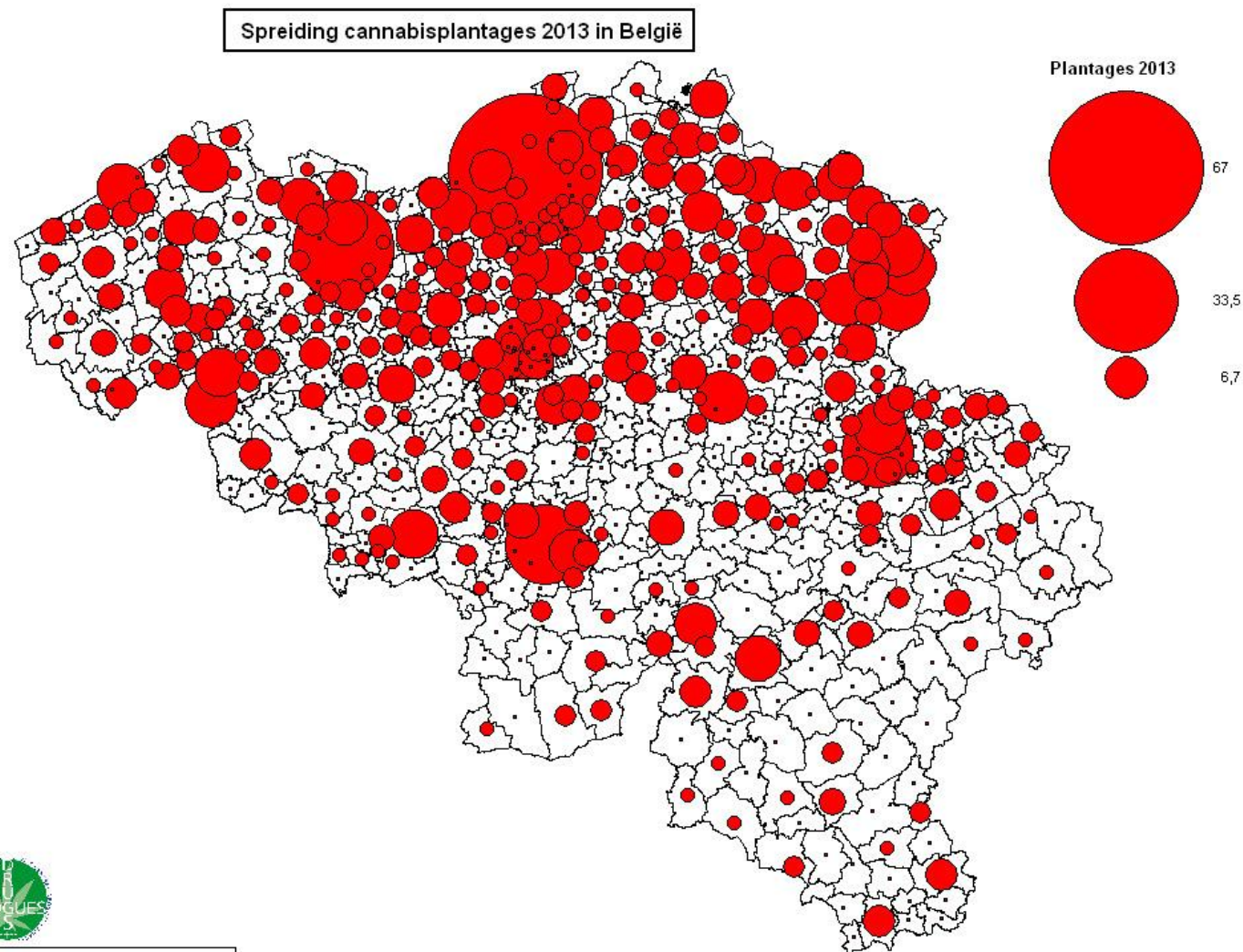
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Cannabis plantations can be anywhere



All over Belgium – increasing phenomenon



Denser at the border
with the Netherlands



Rising number of seizures of cannabis plantations

- **Increasing impact** on the Belgian society.
- (large-scale) cannabis plantations are usually operated/managed by **criminal gangs** (often based in The Netherlands), which causes safety problems and nuisance to society.
However, cannabis plantations also have raised a number of **health and safety issues**.
- The problems might also pose a threat to plantation **neighbours**, particularly in densely populated (urban) areas.



Health, safety and environmental risks

Indoor cannabis cultivation entails a number of risks

unsafe electric wiring

booby traps

structural damage to the buildings

toxic atmosphere

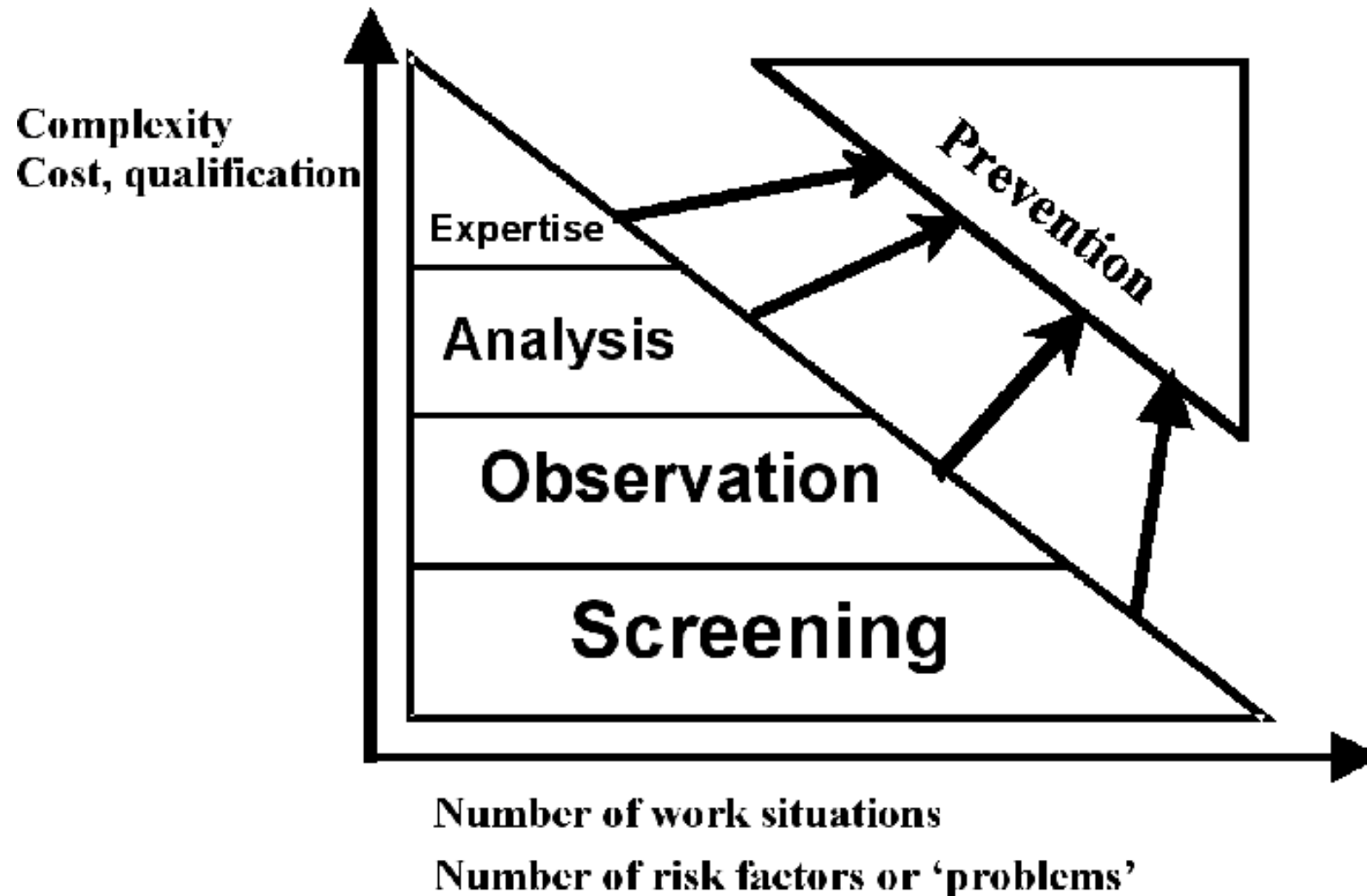
pernicious UV-radiation

toxic liquids

molds on moist walls

allergic reactions

SOBANE strategy



HILCAN study – hazards of illicit cannabis cultivation for public and intervention staff

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Unicity HILCAN



project approach is **interdisciplinary**.

practical knowledge
of intervention staff

toxicological
approach

agronomic skills
product knowledge
(pesticides, fertilizers, etc.)
in cannabis cultivation

immunology and
allergology

KU LEUVEN



Objectives HILCAN

- Make a complete and comprehensive **inventory of the hazards** resulting from indoor cannabis cultivation for each of the target groups described above (qualitative and quantitative analysis).
- Develop firm **guidelines** for police and governments on containing health risks resulting from cannabis cultivation, use and plantation confiscation and dismantling.

Methods HILCAN

- **Literature study** (predominantly foreign reports and papers) on safety aspects of indoor cannabis plantations.
- Subsequently and in collaboration with the Belgian Federal Police a representative number of confiscated indoor cannabis plantations will be **visited** during which **data** on the encountered products and technical installation will be **recorded** and **samples** of products, atmosphere and cannabis plants will be **collected**.
- Samples will be **toxicologically analyzed** (THC-concentrations, pesticide residues, etc.).
- A **survey** will be hold to question the **health symptoms** and **allergies**.

Literature study : 45 sources

- CMHC (2007). A Discussion Paper on Indoor Air Quality Investigations of Houses Used for Marijuana Grow Operations. Technical Series 07-101, Canada Mortgage and Housing Corporation, Ottawa, ON, Canada
- Connell, C.P. (2012). Health Effects Associated with Indoor Marijuana Grow Operations. Technical Review, Forensic Applications Consulting Technologies, Bailey, CO, USA
- Garis, L. (2008). Eliminating Residential Marijuana Grow Operations – An Alternate Approach. Report on Surrey, British Columbia's Electrical Fire and Safety Investigation Initiative. Surrey, BC, Canada
- Johnson, L.I. & Miller, J.D. (2011). Consequences of Large-scale Production of Marijuana in Residential Buildings. *Indoor and Built Environment*, 21(4), 595-600. doi: 10.1177/1420326X11411954
- La Barge, A.P. & Noakes, K. (2005). Indoor Marijuana Growing Operations. *The Police Chief*, 72(3), International Association of Chiefs of Police, Alexandria, VA, USA
- Martyny, J.W., Serrano, K.A., Schaeffer, J.W. & Van Dyke, M.V. (2013). Potential Exposures Associated with Indoor Marijuana Growing Operations. *Journal of Occupational and Environmental Hygiene*, 10, 622-639. doi: 10.1080/15459624.2013.831986
- Van Dyke, M. (2013). Potential Exposures in Illegal Marijuana Grow Operations. Colorado Department of Public Health and Environment, CO, VS

Roadbook for visits of plantations

- Air : Volatile organic compounds (Photo Ionisation Detector), CO², CO, H₂S, NH₃, Cl₂, O₂
- Photographs : products (labels), construction, mold, installations
- Samples :
 - Products
 - Water
 - Plants (3 of each growth stadium)
 - Swabs mold
 - Airfilter



Protection for visits

- Overall Tyvec Classical Xpert
- Half mask 7000 Easylock
- Dust filter Moldex P3 R 9030
- Chemical filter ABEK 1 Easylock 9400
- Boots Hazmax SS SRA HRO CI FO E
- Gloves Virtex 79-700



Air : MultiRAE & MultiRAE Lite

190 Volatile Organic Components

&

- ✓ O₂: outside 19% - 23%
(normal: 20,9%)
- ✓ CO₂: 9999 ppm (MAC = 5000 ppm)
- ✓ CO: 25 ppm (MAC = 25 ppm)
- ✓ H₂S: 10 ppm (MAC = 1,6 ppm)
- ✓ NH₃: 20 ppm (MAC = 20 ppm)
- ✓ Cl₂: 1,5 ppm (MAC = 1 ppm)



Survey

- 3 groups
- Questions: Contact with cannabis, health complaints and allergies
- Surveymonkey



Bijlage VIII. Enquête bevraging interventiepersoneel (NL en FR)

Geachte Heer/Mevrouw,

In samenwerking met de Centrale Dienst Drugs (DJSOC) van de Federale Politie en de onderzoeksgroep Toxicologie en Farmacologie (Prof. dr. Jan Tytgat en dr. Eva Cuypers) van de KUL, verrichten wij momenteel onderzoek naar de risico's waar interventiepersoneel mogelijks aan blootgesteld staan bij de inval in, en opruiming van illegale cannabisplantages. Hiervoor willen wij, via een korte bevraging, een beeld krijgen van de gezondheidsklachten die interventiepersoneel (of personeel ontmantelingsbedrijven) bij of na het betreden van cannabisplantages mogelijks ondervinden. We appreciëren het bijzonder mocht u 5 minuten tijd willen nemen om de korte enquête hieronder in te vullen (voor 15 november 2015). De gegevens worden volledig anoniem verwerkt.

U helpt er de wetenschappelijke studie in grote mate mee vooruit.

Vriendelijke groeten,

Prof. dr. ir. Patrick Van Damme (Projectcoördinator)
dr. ir. Wouter Vanhove

Top of Form

1. U bent een

- ☐ Man
☐ Vrouw

2. Leeftijd:

3. U bent werkzaam bij

- ☐ Lokale of federale politie
☐ Brandweer
☐ Ontmantelingsfirma
☐ Gemeentedienst of andere

Indien politie: welke politiezone?

Expected outcome HILCAN

Research results will for the first time **quantify the gravity of health problems** related to cannabis growing.

- Pesticide problems for example, are evidenced through regular discovery of empty pesticide tanks by police upon confiscation of cannabis plantations, but a comprehensive overview of carefully measured concentrations of e.g. insecticides on plant samples; ozone, CO and other contaminant concentrations in air samples and concentrations of pollutants in sewage water and/or local water resources, is lacking up to date.

Eventually, a **manual will be composed** that will significantly **increase safety of interventions by police**, fire fighters and dismantling personnel.

Documentation HILCAN

RESULTS

Gevaren van de illegale binnenteelt van cannabis voor de omgeving en interventiepersoneel (HILCAN) : eindrapport Tytgat, Jan - Van Damme, Patrick - Cuypers, Eva ... et al. Brussel : Federaal Wetenschapsbeleid, 2017 (SP2673)
[\[To download\]](#)

PROPOSED MEASURES

Gevaren van de illegale binnenteelt van cannabis voor de omgeving en interventiepersoneel (HILCAN) : annexe Tytgat, Jan - Van Damme, Patrick - Cuypers, Eva ... et al. Brussel : Federaal Wetenschapsbeleid, 2017 (SP2674)
[\[To download\]](#)

SUMMARY

Hazards of illicit indoor cannabis cultivation for the environment and intervention staff (HILCAN) : summary Tytgat, Jan - Van Damme, Patrick - Cuypers, Eva ... et al. Brussels : Belgian Science Policy, 2017 (SP2677)
[\[To download\]](#)

Risks & Results of the HILCAN study

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Toxic gases

- Visits : not with first responders – no toxic levels of gases.
- Ventilation ?



THC - Tetrahydrocannabinol

Bodily effects of Cannabis

Eyes:

- Reddening
- Decreased intra-ocular pressure

Mouth:

- Dryness

Skin:

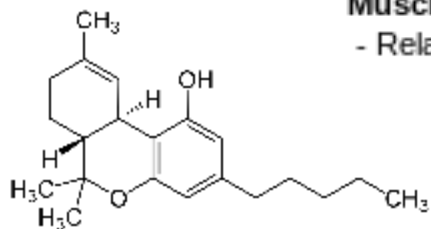
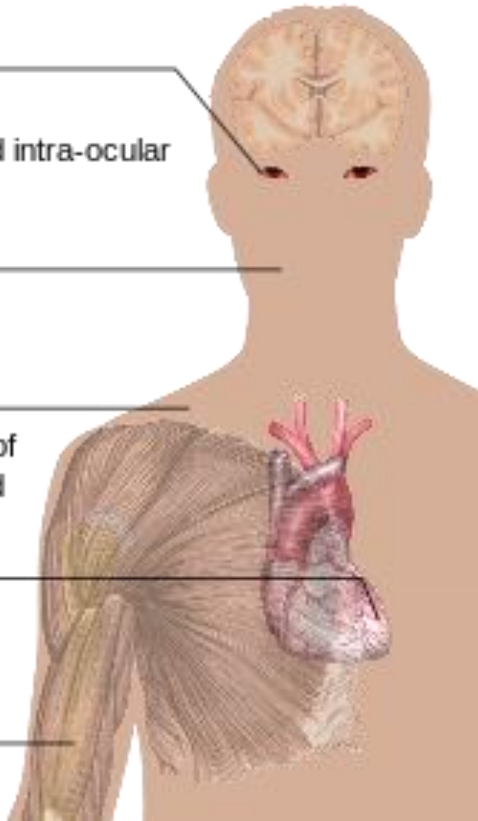
- Sensation of heat or cold

Heart:

- Increased heart rate

Muscles:

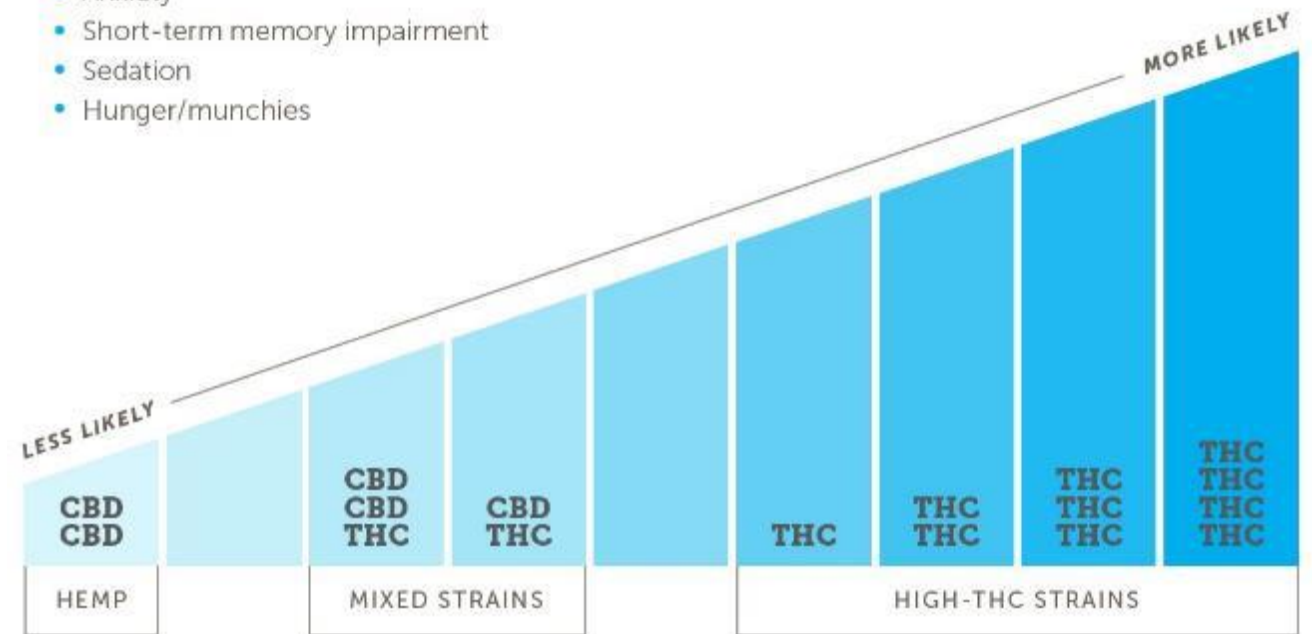
- Relaxation



LIKELIHOOD OF CLASSICAL THC EFFECTS

Potential THC-induced side effects include:

- Anxiety
- Short-term memory impairment
- Sedation
- Hunger/munchies

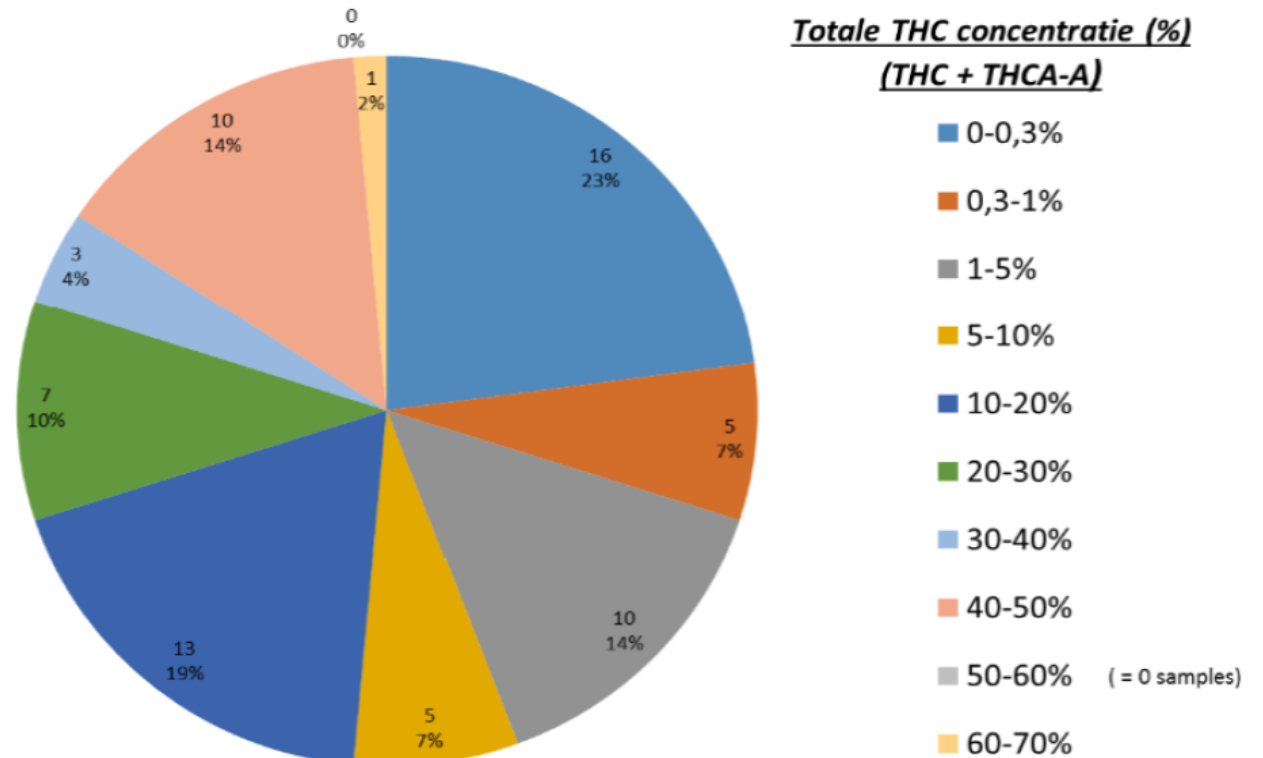


other effect : allergy and cross-allergy

THC - Tetrahydrocannabinol

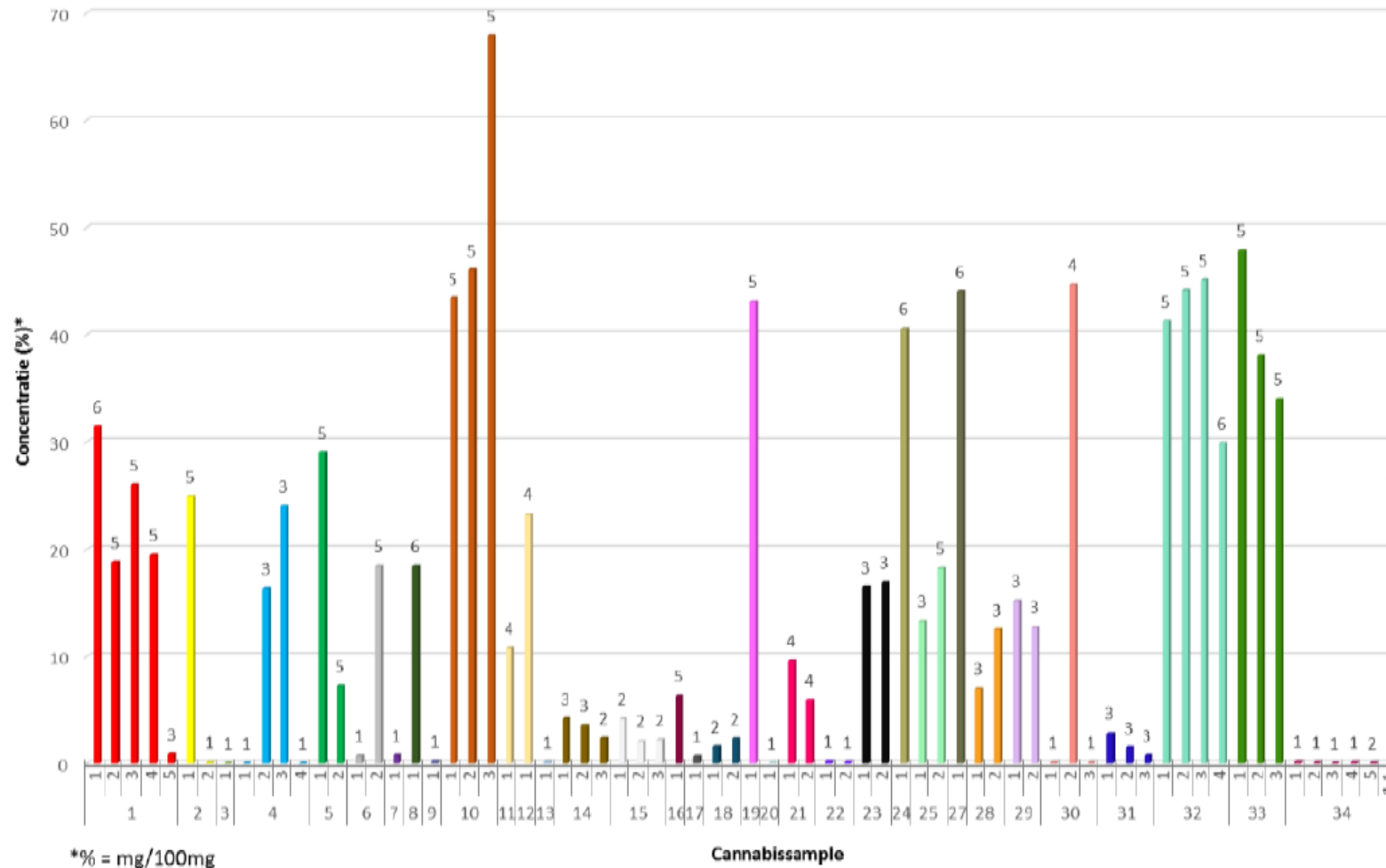


Aantal planten per concentratierange



THC - Tetrahydrocannabinol

Totale THC concentratie in cannabisplanten van illegale plantages uit België



Pesticides - exposure

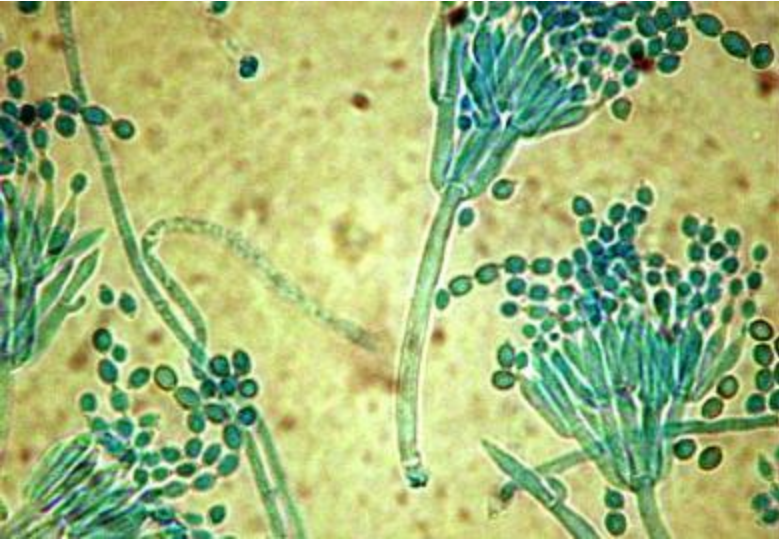
- Contact, ingestion, inhalation



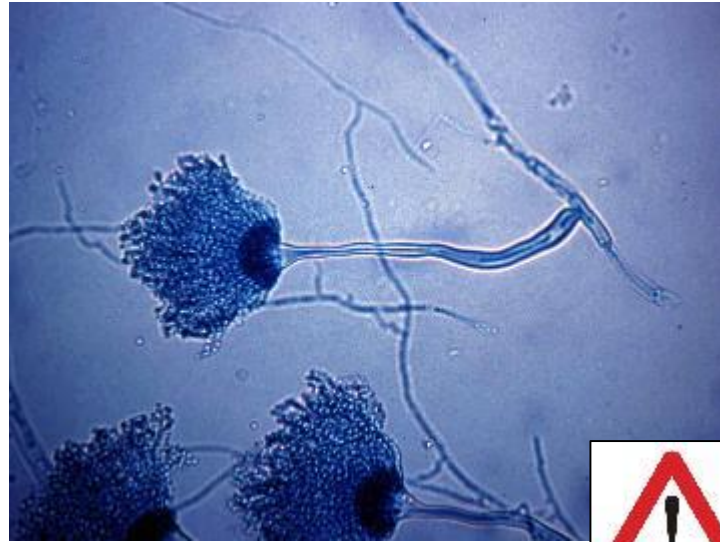
Pesticides - results

- Recipients
 - 23 different pesticides (11 bio-pesticides and 12 chemical pesticides)
 - Goal: 15 insecticides, 4 both insecticide and acaricide, 1 herbicide, 1 fungicide, 1 acaricide.
- Water: n=40 ; 17,5% one pesticide, 2,5% more than one pesticide
- Plants: n=72 ; 64% one pesticide, 35 % more than one pesticide
- Airfilter: n=43 ; 65% one pesticide, 33% more than one.
- Some of the pesticides are **illegal**.
- Some are easily **absorbed** in the body.

Biological - fungi



Penicillium (75%)



Aspergillus (45%)



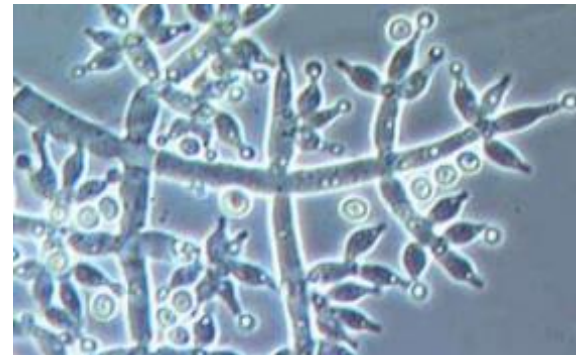
- Most species and numbers are found in the watertanks
- Some less dominant species maybe couldn't be cultivated



Fusarium



Botrytis



Trichoderma

Short term health problems (n=221)

Symptoms	Symptoms	Reported to chef	Medical treatment
Headache	87 (39 %)	17 (8 %)	0 (0 %)
Dizziness	23 (10 %)	5 (2 %)	1 (0 %)
Shortness of breath	23 (10 %)	3 (1 %)	2 (1 %)
Irritation of the skin	52 (24 %)	12 (5 %)	1 (0 %)
Skin rash	16 (7 %)	4 (2 %)	1 (0 %)
Swollen lips or eyelids	8 (4 %)	1 (0 %)	0 (0 %)
Irritation of the nose	62 (28 %)	10 (5 %)	3 (1 %)
Loss of consciousness	3 (1 %)	0 (0 %)	0 (0 %)

- Positive relation between entering cannabis plantations and irritation/itching of skin and irritation/itching of nose/eyes.

Allergies (n=221)

Allergical reaction	Number of respondents with allergical reaction	%
Dust mites	38	17
Tree pollen	23	10
Grass pollen	28	13
Weed pollen	23	10
Appels	2	1
Peaches	3	1

- Irritation/itching of nose/eyes is more frequent with persons who had allergies for dust mites and pollen. All symptoms were more frequent with persons who had allergy to grass pollen.
- Relations between symptoms and allergy to apples and peaches couldn't be examined

Good practice – proposed measures

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Matrix proposed measures

	Risks
Procedures	Personal Protective + Advice Equipment

...

Colour: Risk level

Risk level

[illegible]

Redelijk veilige situatie mits naleven van enkele veiligheids-voorschriften

Very short exposure, safe if you take some precautions

Kortstondige aanwezigheid in plantages mits strikte richt-lijnen

Short exposure, safe if you take strict precautions

Arbeidsintensieve activiteiten met fysiek contact met cannabisplanten, gecontamineerde kweekmaterialen, potaarde of isolatieslabs, verpakkingsmaterialen en restafval

Intensive activities, contact with plants, propagating material, soil, isolation, packing material, waste

Zeer arbeidsintensieve activiteiten met nauw fysiek contact met water, meststoffen, pesticiden en/of chemicaliën

Intensive activities, contact with water, fertilizer, pesticides and/or chemicals

Colour: Risk level

Zooming in on police work

	BEVEILIGING DOOR CRIM. ORGANISATIE	ELEKTRISCHE BEDRADING	ONSTABIELE CONSTRUCTIES	SCHERPE MATERIALEN	ATMOSFEER	SCHIMMELSPOREN	PESTICIDEN	VLOESTOFFEN	PLANTALLERGENEN		
Niet-geplande huiszoeken (geen voorbereiding, onmiddellijke (re)actie)	X	X	X		X		X		X	<ul style="list-style-type: none">• Plastic handschoenen (EU standaard: EN 374:2003)• FFP3 stofmasker (EU standaard EN149:2001)• Veiligheidsbril (EU standaard EN166)	<ul style="list-style-type: none">• Vermijd direct contact met de cannabisplanten• Verblijf niet langer dan nodig onbeschermd in de plantage• Voorwerpen niet onnodig aanraken of verplaatsen• Plaatstoestand immobiliseren of "bevriezen"• Vrijheidsbenaming dader(s)/verdachte(n)• Veiligheidssperimeter instellen
Geplande huiszoeken (met voorbereidingstijd)	X	X	X		X		X		X	<ul style="list-style-type: none">• Persoonlijke of gemeenschappelijke gasdetector• Voltagedetector	<p>Bijzonder aandacht voor:</p> <ul style="list-style-type: none">• Eventuele beveiligingsmaatregelen genomen door de kwekers (bv. camerabewaking, alarmen, boobytraps, etc.)• Electrocutiegevaar• Zuurstofgebrek (door gebruik van CO2-generatoren)• Aanwezigheid van chemische producten (pesticides en groeiregulators)
Registratieactiviteiten		X	X	X		X	X	X	X	<ul style="list-style-type: none">• Persoonlijke of gemeenschappelijke gasdetector• Voltage detector• pH indicatoren• Coverall bestand tegen (chemische) vloeistoffen (Types 3 of 4 - zie onderaan)	<p>Bijzonder aandacht voor:</p> <ul style="list-style-type: none">• Verwijdering en vernietiging van de gebruikte wegwerpmaterialen• Eventuele decontaminatie van de gebruikte uitrusting
Sporenonderzoek				X		X	X	X	X	<ul style="list-style-type: none">• Handschoenen (EU standaarden EN374:2003 én EN388:2003)• Half- of volgelaatsmasker (EU standaard EN149:2001) + ABEK-P3 filter (gassen en sporen) (EU standaard EN143)• Bij halfgelaatsmasker ook veiligheidsbril (EU standaard EN166)• Helm (EU standaard EN812)• Laarzen (EU standaard EN 13832-3)	

Risks to protect

- Protection by criminal organisation
- Electrical cables
- Unstable constructions
- Sharp materials
- Atmosphere
- Mold spores
- Pesticides
- Liquids
- Plant allergen

Police procedures

- 1. Non planned search of the premises** (no preparation, immediate reaction necessary)
fast sweeping of location, identification measures, securing the location, eventually arresting suspects
- 2. Planned search of the premises** (preparation)
fast sweeping of location, identification measures, securing the location, eventually arresting suspects
- 3. Registration**
thoroughly controlling the plantation, make an inventory of the grow materials, propagating materials, plants and samples of plants, taking measurements, traces of earlier harvests, taking pictures
- 4. Trace research**
fingerprints, DNA, taking pictures, taking samples

PPE: Very short term (Scenario 1 & 2)



EN149:2001



EN166



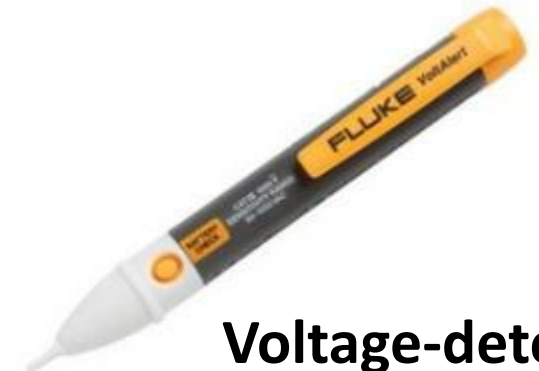
EN 374



EN374:2003



Gasdetector



Voltage-detector

PPE: Long term (Scenario 3 & 4)

EN149:2001



or



ABEK P3 EN143



Gasdetector



Ph-indicator

EN166



EN812



Coverall type 3 or 4



EN374:2003 AND EN388:2003



EN13832-3



Voltage-detector



Advice police operations (Scenario 1 & 2)

- Freeze the situation
- Arrest the suspects
- Avoid contact with cannabis plants
- Do not stay longer than necessary in the plantation
- Do not touch or move objects/materials
- Set up a safety perimeter



- Mind the safety measures (camera, alarm, boobytrap) of the criminals
- Danger of electrocution
- Danger of suffocation (CO²-generators)
- Presence of chemical products (pesticides and growregulators)

Advice police operations (Scenario 3 & 4)



- Remove and destroy the disposable materials
- Decontaminate the used materials, clothes,...

Conclusion

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Conclusion

- 60 % of the intervention staff has minimum 1 health symptom (headache, irritation nose/eyes/skin). Relation with frequency of direct contact with cannabis.
- Safety risks: no booby traps, but electrical hazards and fire hazard
- Toxic gases: immediate ventilation
- Pesticides: widely used, in illegal plantations safety precautions are not (always) followed, resulting in higher risks (irritation, damage to internal organs and cancer)
- Ph-regulators (Acid/base) are corrosive: health damage (contact to skin or ingestion)
- Mold: 75% Penicillium sp. But 30% Aspergillus sp. , cancer and aspergillosis
- THC: Allergies and cross-allergies.

Conclusion : more knowledge, better protection

Collaboration / knowledge exchange

- Lab Intervention Team
Civil Protection (6p) Brasschaat + Ghlin
- Clan lab Response Unit
Federal Police (4p) Ranst
- School Integrated Police – Campus
Vesta Antwerpen (also for synthetical
drugs)



Questions later on

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