

**WORKING PAPER 15-01**



**ILLUMINATING THE  
HAZARDS OF RESIDENTIAL  
MARIJUANA GROW  
OPERATIONS**

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## **About Christian Regenhard**

Christian Michael Otto Regenhard was born on August 25, 1973. He was raised in Co-op City, Bronx, New York. After graduating from the Bronx High School of Science, he served five years in the United States Marine Corps, leaving as a decorated Recon Sergeant. He traveled extensively, often to remote areas of Central and South America, to pursue his love of rock climbing and diverse cultures. After studying language, art and writing at San Francisco State University, he was hired by the Fire Department of New York (FDNY), graduating from probationary school in July 2001. He was assigned to Ladder 131 when he was killed in the collapse of the World Trade Center on September 11, 2001 at age 28.

## **About the Center**

The Christian Regenhard Center for Emergency Response Studies (RaCERS) is an applied research center focused on development of a mix of grounded theory and traditional empirical analysis in the areas of emergency response, coordination of first responders, and dynamics of large-scale incident management and response. The Center is unique in its devotion to first responder-defined and actionable research on policy aspects of emergency response and homeland security from a perspective inclusive of police, fire, and emergency medical services. *Tax deductible donations can be made care of the John Jay College Foundation, 524 West 59 Street, New York, NY 10019.*

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Since its founding in 1964, John Jay College of Criminal Justice has been a leader in the field of public safety, with a diverse variety of academic programs and research capabilities devoted to the study of emergencies and law enforcement organizations such as the fire service, police departments, emergency management offices, and security concerns unequaled by any other academic institution in the United States.

One of the unique aspects of John Jay is its student body. Our students represent a diverse mix reflecting New York, but also the nation and world. Our in-service students include many mid-career emergency responders from virtually every local, state, and federal law enforcement, security, and emergency response organization. As such, we have a unique and long-standing commitment to educating current and future leaders in the emergency response field. John Jay lost over 60 of its alumni, faculty, and students on 9/11. As such, we are uniquely dedicated to enhanced responder safety and effectiveness.

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## 1.0 INTRODUCTION

Much has changed in the marijuana-production landscape in the United States and Canada in recent years, from the expanding legalization and decriminalization of marijuana use in the U.S. to changes in Canada's regulation of how medical marijuana may be grown and sold. Amid these changes, recent research shows that growing marijuana within a residential setting continues to be a high-risk enterprise, with significant health, fire, electrical, structural and other safety hazards that linger long after a grow operation has ceased. Further, Canada's struggles with compliance point to the need for transparency and robust regulation when it comes to marijuana production.

## 2.0 PURPOSE

The purpose of this paper is to draw attention to both the hazards of residential marijuana grow operations (residential MGOs) and the compliance issues that can arise when MGOs are located in private households and/or are not disclosed to local safety, building and health officials.

This paper contributes to the discussion on an important current public policy issue in the United States and Canada. In the U.S., increasing numbers of states are proceeding with decriminalization or legalization of recreational or medical marijuana use (or both), which could be expected to lead to increased marijuana demand and production. In Canada, where marijuana is a federal responsibility, regulatory changes in 2014 has prohibited the growing of medical marijuana in residential MGOs, but make no provision for the remediation of tens of thousands of former medical grow sites. These regulatory changes have been challenged and are currently before the Canadian Federal Court. As well, two of Canada's three main political parties have indicated a willingness to consider moving toward legalization.

## 3.0 RESEARCH METHOD

The development of this paper included a review of both published and unpublished research on residential criminal and medical MGO risks.

In particular, this paper draws on extensive research conducted by the City of Surrey in British Columbia (B.C.), Canada. With a population of more than 500,000, Surrey is located in Metro Vancouver and is B.C.'s second most populous city after Vancouver. Over the past decade, Surrey has been at the forefront of activities in B.C. intended to reduce the hazards associated with residential MGOs.

The marijuana trade flourished in B.C. during the 1990s, before the advent of a coordinated police response to marijuana production. Surrey became one of Metro Vancouver's marijuana-growing hotbeds, with a concurrent increase in related public safety concerns such as fires, home invasions and other violence. The situation continued to escalate until the early 2000s when, for

the first time, new scientific research<sup>1</sup> quantified the public safety risks associated with growing marijuana.

In late 2004, Surrey spearheaded a multi-agency task force (including representatives from the provincial government; provincial fire, safety and police officials; and other stakeholders) that sought a different approach to the problem. The process eventually led to the 2005 launch of Surrey's groundbreaking Electrical and Fire Safety Initiative (EFSI), which approached these hazards from an administrative, rather than a criminal, perspective.

EFSI teams with representatives from the fire service, electrical inspections and bylaw enforcement (accompanied by police for a peace keeping role) conduct safety inspections of suspected residential MGOs, seeking violations to the Building Code, Fire Code and Electrical Code. In the early days of the EFSI, sites were identified through Royal Canadian Mounted Police (RCMP) tips that were then filtered through other criteria, such as moisture in the windows, an unkempt property appearance, and unusual electricity consumption (initially only available through a request under B.C.'s *Freedom of Information & Protection of Privacy Act* to the provincial power authority). After the provincial *Safety Standards Act* was amended in 2006 to permit the power authority to release records of unsafe consumption to B.C. local governments, electricity consumption became the leading trigger for the inspections.

Violations observed by the EFSI team are documented and photographed (between 40 to 50 images per site), and property owners are required to make the necessary repairs. With severe violations of electrical codes, the electricity may be turned off until the property is made safe. Health, environmental, child safety or other concerns are directed to the relevant government agencies. A Controlled Substances Bylaw poses stiff obligations to correct deficiencies, the financial consequences serve as a deterrent and to ensure property owners pay the full cost of the program administration costs and remediation work.

The EFSI model has been replicated in numerous B.C. cities and has been shown to significantly reduce not only residential fires and other typical hazards,<sup>2</sup> but also marijuana production and trafficking<sup>3</sup> in the community.

The program has also produced a wealth of data on residential MGOs. Between March 2005 and December 2013, the Surrey program inspected 1,855 residential MGOs, of which 1,541 were illegal operations. The remaining 314 were licensed medical marijuana production sites, a number representing about 25 per cent of the licensed sites in Surrey, about (1,255) granted at that stage.

Data collected by the EFSI and used for this report included:

- Electrical safety – written reports addressing the use of electrical bypasses, if power was disconnected, if the service panel required attention, if interconnected smoke alarms were present, and other hazards.

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<sup>1</sup> Plecas, Malm, and Kinney (2002)

<sup>2</sup> Girn, P (2007)

<sup>3</sup> Plecas et al. (2009)

- Biological safety – based on photographs, a professional industrial hygienist classified each case in the following categories: visible major mold issue, visible minor mold issue, suspected but not visible mold issue, and no visible mold issue.
- Structural safety – based on photographs, a professional building inspector identified if the structural alterations had contravened zoning regulations, required a building permit or repair permit, and/or had been undertaken without valid permits.

#### 4.0 KNOWN HAZARDS OF RESIDENTIAL MGOS

Private homes are not built for significant indoor plant production and therefore require extensive modifications such as increased electrical power, altered ventilation, structural changes, added watering apparatus, increased air flow, dehumidification, increased levels of carbon dioxide, added cooling units and, in criminal operations, anti-detection measures. As a result, indoor cultivation generally results in some type of structural or contamination hazard.<sup>4</sup>

Typical residential MGO hazards are outlined below and were commonly found in both illegal and licensed medical sites in the Surrey sample.

- Mold: Marijuana is cultivated indoors in a warm, moist environment. Environmental consulting and industrial hygiene professionals have noted improper ventilation at approximately 90% of growing sites, along with the growth of mold from the high levels of moisture. The health risk of the often-extensive mold at MGOs on occupants has also been documented.<sup>5</sup> Mold's ability to grow in hidden locations (e.g., inside walls), and its allergenic, pathogenic and toxigenic potentials create a significant health concern for future occupants. Microscopic mold particles can be absorbed into building materials and linger long after the primary source has been removed.<sup>6</sup>
- Unsafe Structural Changes: Illegal and unsafe structural changes to the building are often made to accommodate indoor MGOs, affecting both the structural integrity and the fire safety of the building. These include cutting into foundations and walls for ventilation and wiring purposes, and manipulating chimneys and roofs.<sup>7</sup>
- Electrical and Fire Hazards: Indoor MGOs bring a high risk of electrical hazards, such as fire and electrocution, because of the need for significant amounts of electricity to power the typically 1,000-watt grow bulbs. Illegal and unsafe electrical practices, including electrical bypasses and improper grounding, are commonly found in former MGOs. The problem is exacerbated by the presence of moisture and water in the MGO growing process. The risk of residential fires in MGOs was assessed in 2012 and at that time was estimated at 24 times as great as that of a regular house.<sup>8</sup>
- Chemicals: Fertilizers, herbicides and pesticides are frequently found at MGOs, often in high concentrations, with signs of spilling and on-site dumping. A study on the use of

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<sup>4</sup> Plecas et al., 2012

<sup>5</sup> Plecas et al., 2012

<sup>6</sup> Garis, L. and Clare, J. (January 2013)

<sup>7</sup> Garis, L. and Clare, J. (January 2013)

<sup>8</sup> Plecas et al., 2012

pesticides in MGOs found 15 different pesticides in 139 homes, some at unsafe levels.<sup>9</sup> Chemicals may be dumped down the drains or on the property, damaging the plumbing infrastructure and contaminating the ground water, city stormwater system and neighbouring properties.<sup>10</sup>

- Carbon Dioxide: Carbon Dioxide (CO<sub>2</sub>) may be used at indoor MGOs to improve the plants' the rate of growth and tolerance for higher temperatures. Unsafe modifications are often made to the building to achieve higher CO<sub>2</sub> levels, including venting the home furnace exhaust into the growing room. Exposure to higher-than-normal levels of CO<sub>2</sub> can be dangerous.<sup>11</sup>

### **Regulatory Compliance**

It is to be expected that numerous regulatory violations are commonly found at former illegal MGOs reviewed by the EFSI team, as criminals would be loathe to call the attention of authorities to their operations. However, some may be surprised to learn that, according to the data, licensed medical MGOs are even more likely than their illegal counterparts to breach zoning bylaws, lack the necessary permits and require building repairs.

This has been a major concern to Canadian cities, which are not privy to the addresses of current or former medical MGOs due to federal privacy legislation, and therefore cannot audit the sites to ensure compliance. As well, although Health Canada instructed licensees to comply with applicable bylaws, codes and regulations, no enforcement system was in place. This resulted in a regulatory void, which undoubtedly contributed to the high non-compliance rate.

### **The Need for Remediation**

Remediation of former residential MGOs is critical for the health and safety of future owners, neighbors, visitors to the home (including emergency responders) and the community as a whole. Unsuspecting buyers may later be forced to pay thousands of dollars (estimated from \$25,000 to \$100,000) to address residual health and safety hazards in their home, and may be denied insurance coverage. Neighbors are at risk from fires, chemical spills and electrocution. Non-remediated sites may be abandoned, property values in the neighborhood may be affected, and the integrity of the community's housing stock may diminish.<sup>12</sup>

## **5.0 CONCLUSION**

As more jurisdictions across North America move toward decriminalization or legalization of marijuana use, it is important that they take steps to mitigate the known hazards associated with residential MGOs (legal or otherwise).

In Canada, strong evidence of non-compliance among licensed medical marijuana growers persuaded the federal government to prohibit the production of medical marijuana in a residential

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<sup>9</sup> Plecas et al., 2012

<sup>10</sup> Garis, L. and Clare, J. (January 2013)

<sup>11</sup> Plecas et al., 2012

<sup>12</sup> Garis, L. and Clare, J. (June 2013)

setting. Given the risks associated with residential MGOs, a similar approach is recommended in jurisdictions with decriminalized or legalized marijuana.

Failing that, the Canadian experience and the data clearly demonstrate the need for a robust regulatory regime for residential MGOs that – at minimum – would include regular compliance inspections while the MGO is active, and complete remediation of the site afterwards.

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