

AT-A-GLANCE: THE EMERGENCE OF NITAZENES AND BUPROPION IN CANADA SINCE 2019

A WORKING GROUP REPORT

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Executive Summary

- Isotonitazene is the most frequently detected Nitazene/Brorphine in Canada, representing 46.8% of all Nitazene/Brorphine detections.
- The number of detections peaked in fall of 2020 with an increase in Etodesnitazene detections, and again in spring of 2021 with increased Protonitazene detections.
- Protonitazene emerged in late 2020 and constituted a quarter of Nitazene/Brorphine detections in 2021.
- Detections were most often reported from Ontario (43.5%) and Quebec (38.5%).
- While Protonitazene was only detected in the east (Quebec, New Brunswick and Ontario), Brorphine was only detected in the west (Alberta, British Columbia and Saskatchewan).
- Brorphine, Etodesnitazene and Metonitazene were mainly detected in powder form while Isotonitazene and Protonitazene were most frequently found in tablet form.



Context

Nitazenes and Brorphine are classified as opioids and belong to the benzimidazole chemical group. The first Nitazene/Brorphine seized and analyzed in Canada was Isotonitazene. It was seized in Quebec City by the local police service and received by the Drug Analysis Service (DAS) in May 2019 (Table 1). Since then, the DAS analyzed several substances belonging to this group including Brorphine, Etodesnitazene, Flunitazene, Metonitazene and Protonitazene (Table 1). Chemical substances in this group continue to emerge and it is now posited that Nitazenes and Brorphine will take an important place in the market of illegal substances in the coming years.¹ Several substances belonging to this group have not been analyzed in Canada but have been reported elsewhere. For example, Butonitazene, which has been found in the US, has not yet been detected in Canada.²

Goal & Focus

This report aims at presenting the result of a pilot project based on a collaborative work between the DAS, the Canada Border Services Agency (CBSA) and the Royal Canadian Mounted Police (RCMP) related to nitazenes and Brorphine in order to draw a more complete picture of the situation in Canada.

Methods

Data Sources

DAS Data

DAS analyzes samples submitted by Canadian law enforcement agencies. All analysis results are entered in a centralized database, the Laboratory Information Management System (LIMS). The presented data covers the period between May 2019 and July 2021, inclusively.

RCMP Data

The data presented here were retrieved following identification of exhibits of interest by DAS. Based on this, the research through the RCMP Record Management System was completed for the same period as provided by DAS.

CBSA Data

The CBSA laboratory analyzes samples submitted by Border Services Officers from Canadian ports of entry. These samples, which are from imported or exported detained goods that are suspected of being or containing drug substances or precursors, are tracked as cases in a centralized Laboratory Information

¹ United Nations Office on Drugs and Crime. Global SMART update 2020: the growing complexity of the opioid crisis. Accessed August 11, 2021. https://www.unodc.org/documents/scientific/Global_SMART_Update_2020-Vol.24-Eng-Final.pdf

² Center for Forensic Science Research & Education. 2021 Q1 NPS Opioids Trend Report. Accessed August 11, 2021. https://www.npsdiscovery.org/wp-content/uploads/2021/04/2021-Q1_NPS-Opioids_Trend-Report.pdf

Management System (LIMS). The presented data is derived from cases that were completed from January 2020 to August 2021, inclusively.

Data Extraction

DAS data

The data presented here were retrieved from DAS Laboratory Information Management System (LIMS).

RCMP Data

Data extraction was completed manually as the Nitazenes and Brorphine are not currently in the available drop down menu, making these substances not easily searchable. As such, most of the research was completed manually from the RCMP file numbers provided by DAS. In some cases, the research was extended to discussions with investigators as the information on file was insufficient.

CBSA Data

The data presented here were retrieved from the CBSA Laboratory Information Management System (LIMS), which was created and is maintained by the CBSA laboratory.

Data Analysis

Analysis was performed in R, a data analysis software. Nitazene/Brorphine detections are defined as the identification of a Nitazene/Brorphine in a unique exhibit.

Data Limitations

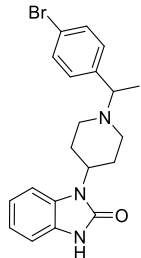
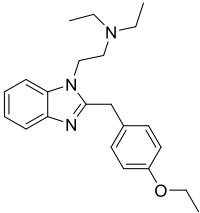
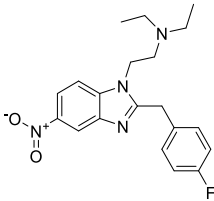
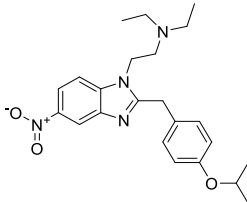
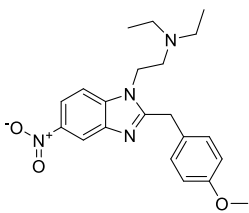
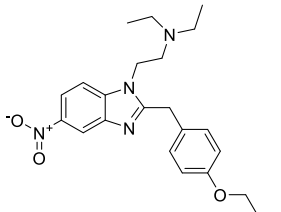
This short report draws on data made available by the Drug Analysis Service (DAS), the Canada Border Services Agency (CBSA) and the Royal Canadian Mounted Police (RCMP).

Sample seized by the Canada Border Services Agency are analyzed in the CBSA Laboratories. This data is only derived from samples submitted for confirmatory analysis at the central CBSA laboratory and may not include all imports or exports of these substances.

Canadian Law enforcement agencies, including the RCMP regularly submit seized exhibits to the DAS Laboratory.

Several limitations govern the data from drug seizures. First, a limited number of samples were analyzed for each substance; low number of samples may not provide an accurate picture of currently circulating substances. Second, since law enforcement agencies submit exhibits for analysis on a voluntary basis, the analyzed samples may not be representative of seized substances. In addition, analyzed samples may not be representative of drug circulating on the market as a number of factors may influence drug seizures and reporting, such as increased awareness of substances and law enforcement capacities and priorities. As such, the data presented here should not be used as a basis for determining trends or making comparisons.

Table 1. First Nitazene/Brorphine Detections in Canada

Substance	Date	First Detection City, Province	Additional Information	Structure
Brorphine	9 May 2019	Calgary, AB	Seized by the police service of Calgary	
Etodesnitazene	25 May 2020	Hamilton, ON	Imported from Poland, seized by CBSA	
Flunitazene	9 Dec 2020	Hamilton, ON	Seized by the police service of Hamilton	
Isotonitazene	3 May 2019	Quebec City, QC	Seized by the police service of Quebec City	
Metonitazene	21 Aug 2020	Hamilton, ON	Seized by the police service of Hamilton	
Protonitazene	30 Dec 2020	Quebec City, QC	Seized by the police service of Quebec City	

Number and proportion of exhibits analyzed between 2019 and 2021

Between May 2019 and July 2021, there were 615 Nitazene/Brorphine detections in samples analyzed by the DAS and CBSA laboratories in Canada; 577 detections were in samples from police seizures, 27 from RCMP seizures and 11 from CBSA seizures (Table 2). The most frequently detected substance is Isotonitazene followed by Etodesnitazene, representing respectively 46.8% and 32.7% of all the Nitazene/Brorphine detections. The least frequently detected substance is Flunitazene which was identified once in an exhibit seized in Hamilton, Ontario. While the proportion of Isotonitazene and Etodesnitazene detections decreased in 2021 relative to 2020 the proportion of Protonitazene and Metonitazene detections increased to constitute 25.6% and 18.7% of Nitazene/Brorphine detections in 2021, respectively (Table 2; Fig 1).

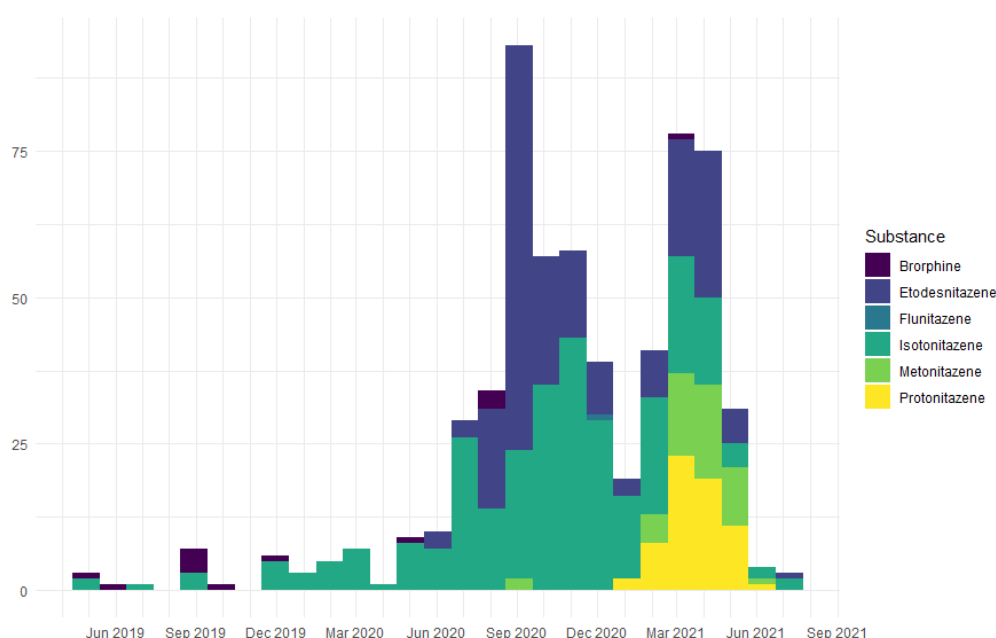


Figure 1. Nitazene/Brorphine Detections across time

Table 2. Nitazene/Brorphine Detections across years

Substance	2019		2020		2021		Total	
	n	%	n	%	n	%	n	%
Brorphine	8	40.0	4	1.1	1	0.4	13	2.1
Etodesnitazene	-	-	138	39.5	63	25.6	201	32.7
Flunitazene	-	-	1	0.3	-	-	1	0.2
Isotonitazene	12	60.0	203	58.2	73	29.7	288	46.8
Metonitazene	-	-	2	0.6	46	18.7	48	7.8
Protonitazene	-	-	1	0.3	63	25.6	64	10.4
Total	20	100	349	100	246	100	615	100

Geographic distribution and trafficking routes

The majority of Nitazene/Brorphine detections were in Ontario (43.5%) or Quebec (38.5%) (Table 3). 65.3% of the Isotonitazene detections were from Quebec, 14.6% from Ontario and 6.6% from New Brunswick. By contrast, 87.1% of the Etodesnitazene detections were from Ontario and 10.4% from British Columbia. While Protonitazene was only detected in the east (Quebec, Ontario and New Brunswick), Brorphine was only detected in the west (British Columbia, Alberta and Saskatchewan) (Fig 3).

Metonitazene was mainly detected in Ontario (Table 3; Fig 2; Fig 3). This tendency for observing different substances in the Eastern and Western part of the country is not new and reflects enduring differences in the illicit drug market.

Evidence from the CBSA suggest that Isotonitazene is being imported into Canada via airfare from China, Hong Kong and South Korea and that Etodesnitazene is being imported from Poland. Evidence from one seizure only suggested that Isotonitazene has also been found to be exported from Canada to the United States via mail.

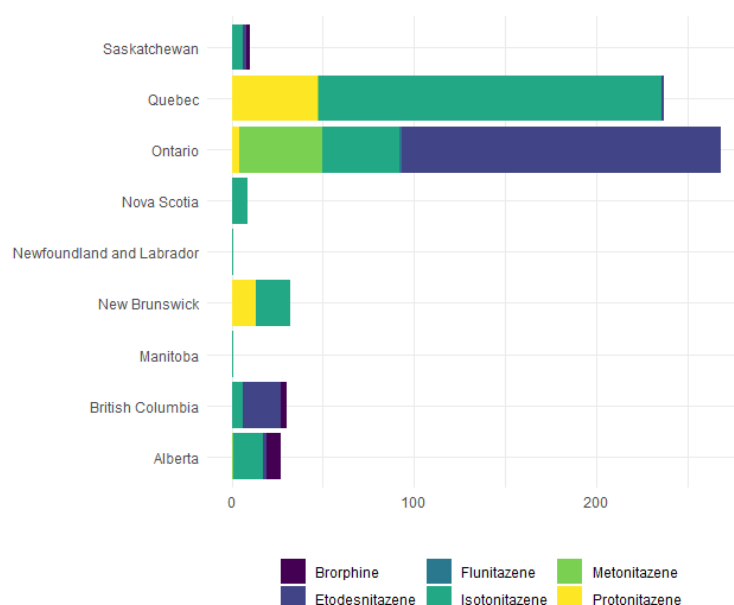


Figure 2. Nitazene/Brorphine detections per Province

Table 3. Nitazene/Brorphine Detections per Province

Province	Brorphine		Etodesnitazene		Flunitazene		Isotonitazene		Metonitazene		Protonitazene	
	n	%	n	%	n	%	n	%	n	%	n	%
Alberta	8	61.5	2	1.0	-	-	16	5.6	1	2.1	-	-
British Columbia	3	23.1	21	10.4	-	-	6	2.1	-	-	-	-
Manitoba	-	-	-	-	-	-	1	0.3	-	-	-	-
New Brunswick	-	-	-	-	-	-	19	6.6	-	-	13	20.3
Newfoundland & Labrador	-	-	-	-	-	-	1	0.3	-	-	-	-
Nova Scotia	-	-	-	-	-	-	9	3.1	-	-	-	-
Ontario	-	-	175	87.1	1	100.0	42	14.6	46	95.8	4	6.3
Quebec	-	-	1	0.5	-	-	188	65.3	1	2.1	47	73.4
Saskatchewan	2	15.4	2	1.0	-	-	6	2.1	-	-	-	-
Total	13	100	201	100	1	100	288	100	48	100	64	100

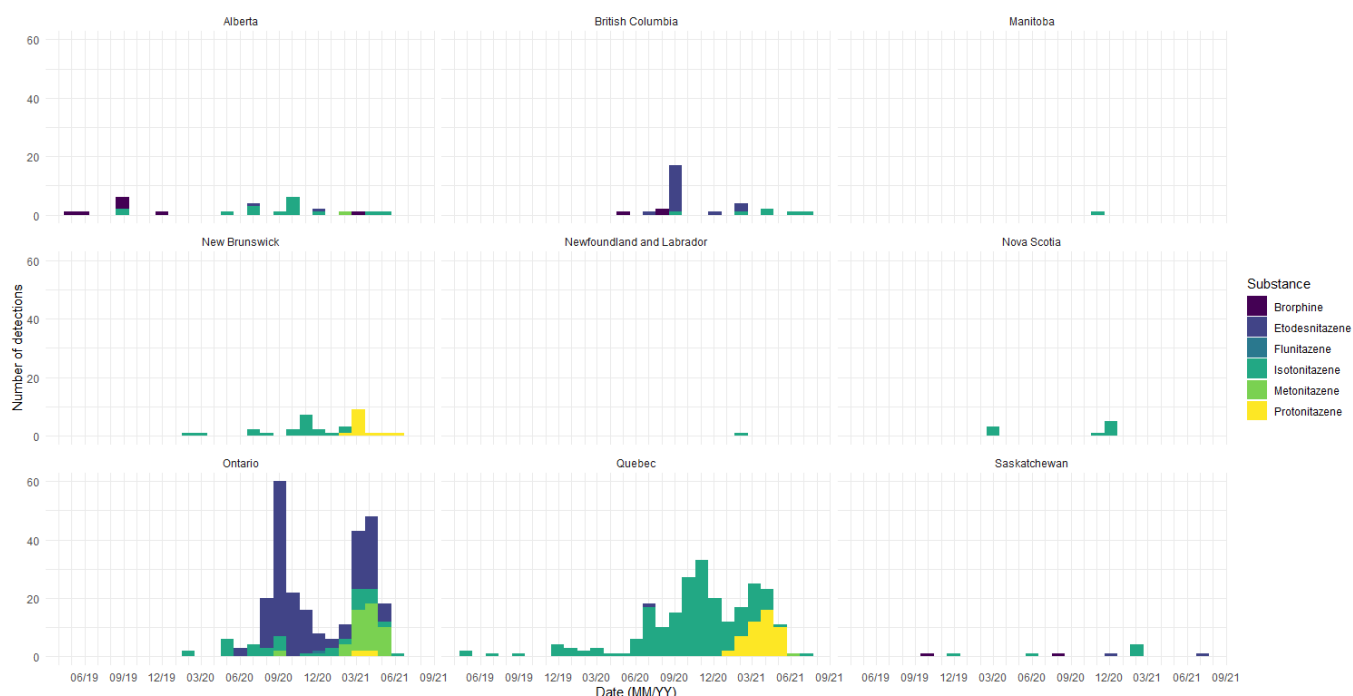


Figure 3. Nitazene/Brorphine Detections per Province across time

Characteristics of exhibits seized and analyzed

While Brorphine, Etodesnitazene and Metonitazene were mainly detected in powder form, Isotonitazene and Protonitazene were most frequently found in tablet form. Flunitazene was only detected once, in powder form (Fig 4). Interestingly, while Isotonitazene appeared predominantly in tablet form in the Eastern provinces (Quebec, Ontario, Nova Scotia, New Brunswick, etc.), it was mainly detected in powder form in the Western provinces (Alberta, Saskatchewan and British Columbia) (Fig 5).

The largest seizure of Etodesnitazene was reported in May 2020 at the Hamilton Airport by the Canada Border Service Agency (CBSA) where 500 g was being imported from Poland (Table 4).

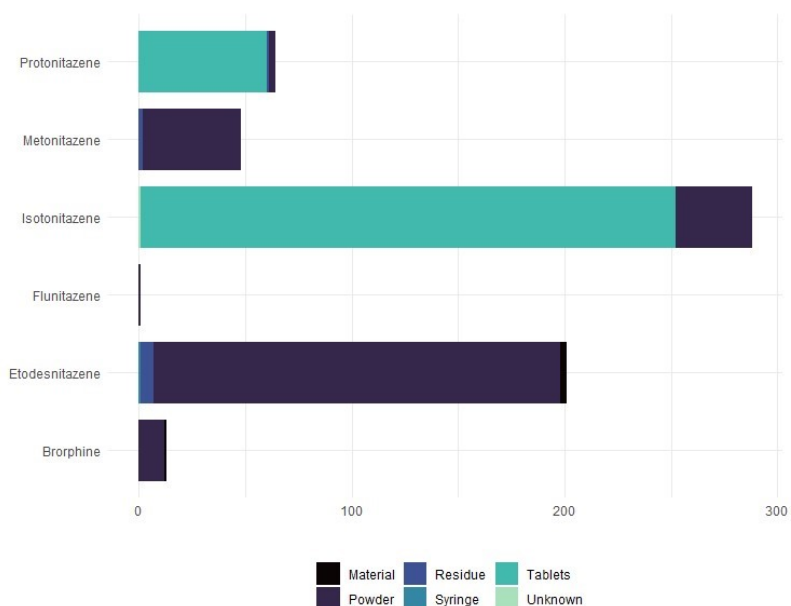


Figure 4. Forms of Nitazene/Brorphine detections

The largest seizure of Isotonitazene was reported by CBSA in April 2021 in Vancouver International Airport where 500g of the substance was seized as it was being imported from Hong Kong (Table 4). CBSA also intercepted 500g of Isotonitazene at the Pearson International Airport Cargo in April 2021 as it was being imported from South Korea.

Table 4. Largest known Nitazene/Brorphine seizures (Data from CBSA and RCMP)

City, Province	Date	Substance	Form	Quantity	Source
Kelowna, British Columbia	14 Aug 2020	Brorphine	Powder	0.46 g	RCMP
Hamilton, Ontario	25 May 2020	Etodesnitazene	Powder	500 g	CBSA
Moncton, New Brunswick	11 Dec 2020	Isotonitazene	Tablets	10 tablets	RCMP
Vancouver, British Columbia	22 Apr 2021	Isotonitazene	Powder	500 g	CBSA
High Prairie, Alberta	11 Feb 2021	Metonitazene	Powder	2 g	RCMP



Figure 5. Forms of Nitazene/Brorphine detections per Province

Conclusion

In summary, Isotonitazene is currently the most frequently detected Nitazene/Brorphine in Canada. The number of detections peaked in fall of 2020 with an increase in Etodesnitazene detections, and again in spring of 2021 with increased Protonitazene detections. Protonitazene emerged in late 2020 and constituted a quarter of Nitazene/Brorphine detections in 2021. Detections were most often reported from Ontario and Quebec. The type of substance found as well as their form is regionalised. Continued monitoring is required to ensure partners are aware of the presence of harmful substance on the Canadian market.

Acknowledgements

The development of this fact sheet was made possible through collaboration of Health Canada Drug Analysis Service (HC DAS), the Royal Canadian Mounted Police (RCMP) and the Canada Border Services Agency (CBSA). We wish to thank the members of the Joint HC DAS, RCMP-and CBSA Working Group for their contributions in the development of this information product.

Suggested Citation

Government of Canada. (2022). Health Canada Drug Analysis Service, Royal Canadian Mounted Police, Canada Border Services Agency. At-A-Glance: The Emergence of Nitazenes and Brorphine in Canada since 2019. Longueuil (QC), 2022. Retrieved from <https://www.canada.ca/en/health-canada/services/publications/healthy-living/emergence-nitazenes-brorphine-canada-2019.html> .

For more information, please contact Health Canada's Drug Analysis Service:

<https://www.canada.ca/en/health-canada/services/health-concerns/controlled-substances-precursor-chemicals/drug-analysis-service.html#a3>

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Cat.: H139-37/2022E-PDF | ISBN: 978-0-660-42202-2 | Pub.: 210669