

Contraband detection technologies

A market survey

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All correctional agencies, to some extent, struggle to control contraband, an umbrella term referring to anything inmates are prohibited from possessing. In general, contraband consists of any item that poses some sort of threat to institutional security, public safety as a whole and inmate health and welfare.

Although each agency may define contraband differently, there are four universal constants: contraband can enter an institution through a variety of pathways; is often difficult to detect; fuels the black-market economy within the institution; and ultimately undermines the safety and security of the institution. Agencies are increasingly relying on technology to support contraband interdiction efforts. To help agencies identify the available technology options, the National Institute of Justice funded A Market Survey on Contraband Detection Technologies. Prepared by Johns Hopkins University Applied Physics Laboratory, operators of the National



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Criminal Justice Technology Research, Test and Evaluation Center, this survey presents information on 103 contraband detection products offered by 33 commercial vendors.

The problem

As long as correctional institutions have existed, there has been contraband. Contraband can be a moving target in more ways than one. What is considered contraband may vary among correctional agencies and over time. Some types of contraband are consistent across jurisdictions (e.g., weapons, tools,

drugs, alcohol). Some contraband may vary among jurisdictions (e.g., tobacco was sold in institutions for decades but is now considered contraband in the states that have banned smoking). Further, societal and technological changes may create new forms of contraband. For example, 25 years ago, cellphones were not thought of as a threat to correctional institutions as they are today. Although all forms of contraband can, to varying degrees, pose a risk, cellphones and drugs appear to be particularly challenging and growing threats.¹

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Cellphones

Contraband cellphones have been described as the most pressing concern of many correctional administrators; these devices pose a significant threat not only to institutional security, but to public safety in general. For example, inmates have used cellphones to plan the murder of witnesses in the community, escapes, attacks on correctional staff and institutional disturbances. Inmates have terrorized victims and operated ongoing criminal enterprises from drug smuggling to elaborate wire fraud and money laundering schemes. By conservative estimates, tens of thousands of contraband cellphones are confiscated each year.² Of course, this represents only a fraction of the total number, as many devices are not located and remain in circulation.

A recent disturbance at a South Carolina prison illustrates the danger of contraband cellphones. During this disturbance, considered the deadliest riot in 25 years, seven inmates were murdered and 17 others were wounded in a gang-related dispute over control of the contraband cellphone market.³

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Drugs

Drugs have been a perennial concern for correctional administrators, due in part to the large number of inmates with substance abuse issues. Drug use is rampant in some jurisdictions. In California, for example, a quarter of the state's prison population was drug tested, and nearly 23 percent were positive.⁴ Beyond the violence associated with gang control of the drug trade, the presence of drugs can hinder rehabilitative efforts. Further, overdose deaths in correctional institutions are becoming increasingly common. The Bureau of Justice Statistics reports that a total of 139 in-custody deaths were attributed to drug or alcohol intoxication in 2014 — a 54 percent increase over the previous two years.^{5,6} Many institutions are reporting increasing inmate use of synthetic cannabinoids (e.g., K2 and Spice), which can cause dangerous behaviors, and several news reports have described inmates exhibiting acute psychotic reactions to these drugs.⁷ One increasingly common contraband drug, suboxone, may be hidden under postage stamps on letters mailed to inmates.

These two major, but very different forms of contraband illustrate some of the challenges of detection. The technologies used to detect cellphones likely will be quite different from those used to detect drugs, but there are further nuances to be considered. For example, the technologies used to detect drugs hidden in mail will be different from those used to find drugs that have been smuggled within a body cavity. Moreover, because contraband takes various forms, there is no single

technology that will detect all contraband. Thus, to effectively address the contraband issue, agencies, especially with limited budgets, should assess their greatest contraband threats and develop awareness of the cost-benefits of solutions available — how they work and how best to apply them.

Market survey

Most correctional agencies lack staff resources to conduct exhaustive searches to identify the contraband detection technology solutions available for the particular threat they are facing. To help bridge this gap, Johns Hopkins University conducted a market survey, and the results were published in a report called *A Market Survey on Contraband Detection Technologies*.⁸ Data was provided by vendors who responded to a request for information or were derived from searches of vendor websites. Ultimately, data on over 100 different products were compiled and organized in three major categories:

- Person-borne detection — technologies used to find contraband concealed on a person, including within body cavities, and that include mainly handheld and walkthrough devices.
- Vehicle-borne detection — technologies that detect contraband concealed in cars and trucks that come onto correctional facility grounds and include camera systems, visual search aids and drive-through systems.
- Environmental detection — technologies that detect contraband hidden, for example, in mail, parcels, walls and furniture. →

Table 1: Type of Data Collected for Each Category

Data Collected	Person-Borne Detection	Vehicle-Borne Detection	Environmental-Borne Detection
Vendor	Y	Y	Y
Product Name and Model	Y	Y	Y
Primary Purpose	Y	Y	Y
MSRP	Y	Y	Y
Dimensions	Y	Y	Y
Weight	Y	Y	Y
Portability	Y	Y	Y
Metal Detection	Y	Y	Y
Non-Metal Detection	Y	Y	Y
Detects Cellphones	N	N	Y
Body Cavity Detection	Y	N	N
People/Animal Detector	N	Y	N
Type of Detector Used	Y	Y	Y
Inspection Time	Y	Y	N
Average Time to Generate Alarm	N	N	Y
Alert/Alarm Mechanism	Y	Y	Y
Power Requirements	Y	Y	Y
Battery Discharge Time	Y	N	Y
Warranty	Y	Y	Y

Table 1 presents the type of information collected for each category. Pertinent information is provided for each product for easy comparison. See Figure 1 for an example of the type of data collected for each product.

Conclusion

Contraband is an ongoing threat to institutional security, and agencies should leverage appropriate technology to support interdiction efforts. This survey is not intended to evaluate or rank the products. No evaluations were conducted to determine product effectiveness, nor were any vendor claims validated. Instead, this market survey is intended to provide agencies with a starting point to identify potential solutions. The next steps should involve contact with the relevant vendors for up-to-date information. Further, agencies are encouraged to connect with their peer networks and/or state and national associations for input on how these solutions have performed in the correctional environment.



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Figure 1

Vendor	Product Name and Model	Primary Purpose	MSRP	Dimensions (H"xW"xD")	Weight (lbs.)	Portability	Indoor/Outdoor	Metal Detection	Non-Metal Detection	Body Cavity Detection	Type of Detector Used	Total Inspection Time (sec./person)	Alert/Alarm Mechanism	Power Requirements	Battery Discharge Time (hours)	Warranty (months)
X	1	Handheld contraband detection	\$169	1.3. x 1.8 x 7.9	.06	Handheld	Both	Yes	No	Yes	Triaxial detection field	45	Vibration	9V Battery	--	36
Y	2	Walk-through contraband detection	--	82 x 32 x 63	56.0	Fixed but portable	--	Yes	--	Yes	Magnetic sensors with onboard digital signal processing	--	Audio/Visual	110/229 VAC; 3.5A	4	--
Z	3	Cavity screening system	\$11,500	50 x 22 x 51	210	Fixed but portable	In	Yes	No	Yes	--	--	Audio/Visual	115-240 CAC/ 47-63 Hz	--	24

ENDNOTES:

¹ NIJ is working with the Urban Institute and the American Correctional Association (ACA) (award 2015-IJ-CX-K001) to conduct further relevant research.

² Riley, Matt, "Southern Prisons Have a Cellphone Smuggling Problem," *NBC News*, September 30, 2017.

³ Simpson, Ian, "Deadly South Carolina Prison Riot Exposes Staffing Shortage," *Reuters*, April 19, 2018.

⁴ Associated Press, "California Prisons Find 1 in 4 Inmates Used Drugs," April 7, 2014.

⁵ Noonan, M., *Mortality in Local Jails, 2000–2014 — Statistical Tables*, Washington, D.C.: Bureau of Justice Statistics, NCJ 250169, December 2016.

⁶ Noonan, M., *Mortality in State Prisons, 2000–2014 — Statistical Tables*, Washington, D.C.: Bureau of Justice Statistics, NCJ 250150, December 2016.

⁷ Maxfield, Jen, "Investigation Expands After 13 Inmates Apparently Overdose on Synthetic Marijuana at New York Jail," Associated Press, July 21, 2015. <https://www.nbcnewyork.com/news/local/Inmate-Overdose-Westchester-Jail-Drug-Contraband-Police-Investigation-New-York>

— 317814891.html. Also see, Schoenly, Lorry, "Synthetic Marijuana: A Very Real Contraband Hazard," *Corrections One*, August 25, 2015.

⁸ A copy of the market survey can be accessed online at: <https://www.ncjrs.gov/pdffiles1/nij/grants/250685.pdf>.