

# Advanced Intelligent Packaging to Prevent Misuse and Abuse of Prescription Drugs

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## Technology description

### Executive Summary

The opioid epidemic in the United States has soared to new heights within the past ten years. In 2016, 215 million opioid prescriptions were handed out at pharmacies across the U.S. resulting in 64 thousands deaths due to overdose or misuse. The opioid crisis has a \$193 billion annual impact on the economy with an overdose rate of 245.8 deaths per million of the population. The public health crisis of opioid abuse is also being addressed by packaging manufacturers to limit access of opioids to non-target users. The drug packaging industry can solve two problems at once by efficient package design: (1) Access and distribution of opioids or dangerous drugs, (2) drug scheduling and reminders for patients to ensure they are taking the prescribed amount each day.

### Description of Technology

The invention is a device that will limit access to prescription medications by biometric authentication, tracking medication distribution via RFID technology, and reducing overdose risk by dispersion of anti-tampering materials when necessary. Biometric and electromechanical lockout sensors will be integrated with printed RFID sensors and combined in the packaging design. (Located in the top of the bottle) An aversive material, denatonium benzoate, will be lined in the package jacket to prevent tampering such as cutting open the bottle to avoid the biometric sensor.

## Application area

Prescription Medicine

Drug Monitoring

Public Health Programs

Drug Scheduling Reminders

Medication Adherence Device

## Advantages

The RFID integration allows for unit-based traceability of prescription drugs.

Biometric authentication and packaging safeguards prevents unintended use of medication.

RFID technology can be printed at mass manufacturing scale.

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