

**Drug Take-back Programs:  
Safe Disposal of Unused,  
Expired, or Unwanted  
Medications in North Carolina**

**Prepared for:  
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# TABLE OF CONTENTS

Executive Summary.....	1
Key Components.....	2
Introduction.....	5
Drug Take-back Programs.....	6
I. Background.....	6
II. Drug Take-back Program Characteristics.....	9
III. Challenges Facing Drug Take-back Programs.....	10
IV. Successes Supporting Drug Take-back Programs.....	12
V. The Future.....	14
References.....	15

## EXECUTIVE SUMMARY

The overwhelming majority of households today have unused medications that are either being stored in medicine cabinets or disposed of improperly.<sup>1</sup> The proper disposal of unused, expired, or unwanted pharmaceuticals is a growing public health concern for residents of North Carolina as well as the United States in general.

*Proper disposal of drugs is a growing health problem.*

This excess of medications in our homes creates significant opportunities for unintentional poisonings, illegal distribution, substance misuse or abuse, and environmental contamination. Compounding the problem of surplus medications, current federal and state legislation to address the issue of proper disposal lacks uniformity, is limited and inconclusive. Thus, the burden of safe and proper drug disposal is placed on emerging local community drug take-back programs.<sup>2</sup>

*Local take-back programs are an emerging solution.*

This white paper seeks to highlight the importance of, and pave the way for, a collaborative effort among North Carolina agencies to develop and advocate for a strategic statewide plan for a safe and secure drug take-back disposal effort.

## KEY COMPONENTS

The key components outlined in this review and a summary of their contents include:

### I. Background Overview

- **North Carolina Prescriptions.** The average North Carolinian fills 14 prescriptions annually, totaling over 127 million prescription drugs that enter our households each year.
- **U.S. Prescriptions.** An estimated \$200 billion dollars of pharmaceuticals were sold within the U.S. in 2007.
- **Fate of Unused Prescriptions.** Over one billion dollars worth of prescription drugs each year are either being stored in medicine cabinets or thrown away.
- **Outcomes of Improper Disposal.** Improper disposal of unused, expired, or unwanted pharmaceuticals adversely affects our communities through 1) unintentional poisonings, 2) misuse, abuse, and diversion, and 3) environmental contamination.
- **North Carolina Unintentional Poisonings.** The North Carolina Division of Public Health estimates that since 1999, more than 75% of all unintentional poisonings have been due to the misuse or abuse of over-the-counter and prescription drugs.
- **Misuse and Abuse.** The National Institute on Drug Abuse has estimated that 20% of the population—about 48 million Americans—will use prescription drugs for nonmedical reasons in their lifetime.
- **Environmental Contamination.** The Associated Press has reported that the health-care industry is currently flushing an estimated 250 million pounds of unused or expired pharmaceuticals a year, creating a significant potential for environmental contamination.

## **II. Drug Take-back Program Characteristics**

- **Fate of Collected Drugs.** Drugs collected by officials at permanent return programs or one-day events are disposed of according to EPA approved methods such as incineration.
- **Ongoing Programs.** Currently, over 30 permanent medication-return and one-day drug take-back programs are established and happening across the U.S.

## **III. Challenges Facing Drug Take-back Programs**

- **Existing Laws and Regulations.** Restrictive laws and regulations affecting the efficient handling and disposal of controlled substances constitute the most significant challenge drug take-back efforts must overcome.
- **Equipment Costs.** Permanent disposal programs using secured drop-off bins can have costs estimated to be over \$300,000.

## **IV. Successes Supporting Drug Take-back Programs**

- **Example of What Can Be Done.** Maine's drug take-back program reportedly collected over 380,000 pills and safely destroyed 250 pounds of controlled pharmaceuticals.
- **Federal Officials Follow Suit.** DEA conducts first-ever national drug take-back day, collecting over 121 tons of medications at more than 4,000 sites nationwide.
- **Ongoing Congressional Efforts.** In May 2010, the U.S. Attorney General's office signed a letter of support for two bills, one in the House and the other in the Senate (H.R. 1359 and S. 3397, respectively) both of which were entitled, "Secure and Responsible Drug Disposal Act of 2009."

#### **IV. The Future**

- **Partnering of State Agencies.** Effective environmental and policy changes will be critical for producing meaningful changes in drug disposal practices in North Carolina. Such changes can only be accomplished through collaborative multidisciplinary partnerships.

## INTRODUCTION

According to the State Health Facts on Prescription Drugs, the average North Carolinian fills 14 prescriptions annually, totaling over 127 million prescription drugs that enter our households each year.<sup>3</sup> If United States' statistics apply at all to North Carolina, many patients do not take or finish these medications as intended by the prescribing physician, leaving the problem of disposing of these unneeded, unwanted, or expired medications.

*North Carolinians fill over 127 million prescriptions each year.*

Estimates show that over 40% of prescription drugs dispensed each year to consumers in the United States are never actually used. Instead, over one billion dollars worth of prescription drugs are either stored in medicine cabinets or thrown away.<sup>1</sup> These unused prescriptions in our homes not only have the potential to cause environmental contamination through improper disposal, but they also contribute to the rising prevalence of unintentional poisonings, illegal prescription drug diversion, and substance misuse or abuse.

*Over 40% of prescription drugs are never used.*

Given that Federal laws and regulations do not clearly and specifically describe how unused medications should be disposed of, state agencies are taking the lead and partnering together to become involved in the efforts to address this growing problem. In North Carolina, these strong partnerships will effect a change of culture, beliefs, and attitudes of its residents about the impact of unused medications on the safety of our children, the threat of substance abuse, and the pristine nature of our environment.

*State agencies are taking the lead in disposal efforts.*

# DRUG TAKE-BACK PROGRAMS

## I. Background

Currently, the United States is the largest market in the world for pharmaceutical products, and the use of both over-the-counter and prescription drugs continues to rise. In 2007 an estimated \$200 billion dollars of pharmaceuticals were sold within the United States.<sup>4</sup>

Although the use of medications continues to increase, evidence-based guidance on effective methods remains unavailable to negate the adverse consequences of improperly disposing unused, expired, or unwanted drugs.

*Evidence-based guidelines for proper disposal are unavailable.*

Under existing policy provisions, individuals with controlled substances are especially challenged in this regard. Currently, these patients have three options to dispose of their medications when they are no longer wanted or needed:<sup>5</sup>

*Controlled substances present a particular disposal challenge.*

1. Flush the prescription down the drain (for certain drugs as recommended by the FDA)
2. Mix the drug with an undesirable substance (e.g., kitty litter) and throw the mixture in the trash
3. Find a local community drug take-back program and dispose of it in that manner

However, these recommendations are not always disseminated or discussed with consumers, may be difficult for them to comply with, or cause more problems than they solve.<sup>6</sup> For example, advising consumers to dispose of controlled substances by flushing according to FDA recommendations does not guarantee that these same drugs are not introduced into our wastewater treatment plants, because these facilities do not remove them from the effluent water. Combining unused medications with kitty litter and disposing into the household waste also poses the threat of leaching contaminants into our landfills.

*Recommendations for disposing of controlled substances may in themselves cause problems.*

Local drug disposal take-back programs, while being the most environmentally friendly option, are faced with limitations due to legal restrictions concerning controlled substances and challenges from insufficient resources and coordination efforts.<sup>7</sup>

Therefore, the majority of unused medications (including controlled substances) are being stockpiled in medicine cabinets across America. The implications of not safely disposing of these unused, expired, or unwanted pharmaceuticals can adversely affect our communities in three distinct areas:

*Most unused medications are stockpiled in medicine cabinets.*

- **Poisoning Issues:** unintentional poisonings
  - **Abuse Issues:** misuse, diversion, and abuse
  - **Environmental Issues:** environmental contamination
- **Poisoning Issues.** According to the National Drug Control Strategy, overdose deaths in the United States related to prescription drugs are currently four to five times higher than those of the 1970s at the height of the black tar heroin epidemic and twice as high as the crack cocaine peak of the early 1990s.<sup>8</sup> The North Carolina Division of Public Health estimates that since 1999, more than 75% of all unintentional poisonings have been due to over-the-counter and prescription medications. Data from 1999–2004 ranks North Carolina in the upper one-third of rural states for the highest increase in the percentage of deaths from unintentional poisonings.<sup>9</sup>

*Over the counter and prescription drugs have caused 75% of all unintentional poisonings in North Carolina.*

Approximately 40% of injuries from unintentional ingestions of poisons occur in children under five-years of age. Note that historically throughout the nation the leading cause of unintentional death has been motor vehicle traffic deaths. However, the steady increase of unintentional poisonings due to medications has in fact already surpassed traffic deaths in seven states and is projected to become the leading cause of unintentional deaths in North Carolina by 2017.<sup>10</sup>

*Children under five years of age are particularly affected.*

- **Abuse Issues.** Although restrictions and control mechanisms are already in place within the prescription drug delivery system to deter

diversion and abuse, the prevalence of nonmedical use and abuse of pharmaceutical drugs is still on the rise. The National Institute on Drug Abuse has estimated that 20% of the population, about 48 million Americans, will use prescription drugs for nonmedical reasons within their lifetime.<sup>11</sup> According to the Office of National Drug Control Policy, prescription drugs are the second most abused category of drugs following marijuana.<sup>12</sup> A study conducted by the Substance Abuse and Mental Health Services Administration reported that the portion of substance abuse treatment admissions attributed to the abuse of prescription pain relievers for individuals 12 years of age and older increased over 400% from 1998 to 2008.<sup>13</sup>

*Despite existing regulations, abuse of pharmaceuticals is increasing.*

Many teens today are naïve to the dangers and addictive potential of prescription drugs, assuming they are safer than illicit street drugs because they have legitimate legal uses and were prescribed by a physician. This perspective further complicates diversion control efforts, because 56% of people 12 years of age or older who abuse prescription drugs obtained them from a friend, family member, or household medicine cabinet.<sup>12</sup>

*Teens wrongly assume that prescription drugs are less addictive than street drugs.*

The most common prescriptions abused for nonmedical use are opioids such as OxyContin<sup>®</sup> (oxycodone hydrochloride) and Vicodin<sup>®</sup> (hydrocodone bitartrate), central nervous system depressants such as Xanax<sup>®</sup> (alprazolam), and stimulants such as Adderall<sup>®</sup> (dextroamphetamine saccharate).<sup>11</sup> The growing abuse endemic is continually reported in studies such as the one from the National Institute on Drug Abuse in 2007 stating that almost 10% of 12<sup>th</sup> graders reported abusing Vicodin<sup>®</sup> at least once in the last year.<sup>14</sup> The North Carolina Youth Risk Behavior Survey (YRBS) reported that 20.5% of high school youths have taken prescription drugs such as OxyContin<sup>®</sup> at least once in their lifetime; the rate for Eastern NC (Region 1) was even higher at 21.9%.<sup>15</sup>

*Opioids, CNS depressants, and stimulants are the most commonly abused prescription drugs.*

- **Environmental Issues.** Active Pharmaceutical Ingredients are contaminating the environment and finding their way into our drinking water via human excretion and improper drug disposal. A 2002 study

from the U.S. Geological Survey reported that 80% of the 139 streams studied had detectable concentrations of human and veterinary drugs including hormones and steroids.<sup>6</sup> Studies have linked reproductive problems and lowered immune response in fish and frogs to pharmaceutical hormone exposure. In a nationwide study, the occurrence of intersex fish was most prevalent in the Southeastern U.S. In particular, 91% of largemouth bass tested in the Yadkin-Pee Dee basin in North and South Carolina showed intersex characteristics.<sup>16</sup>

*Over 80% of waterways have detectable concentrations of drugs.*

The Associated Press has reported that the health-care industry is currently flushing an estimated 250 million pounds of unused or expired pharmaceuticals a year.<sup>17</sup> As proper disposal practices in North Carolina are not required at local or state levels, disposal via flushing is still practiced or recommended in many of our healthcare facilities.<sup>6</sup> The contamination resulting from this practice not only impacts aquatic life, but the long-term implications of pharmaceuticals ranging from sex hormones to antibiotics present in Americans' drinking water is not fully understood. Dozens of pharmaceutical drugs—including antibiotics, anticonvulsants, mood stabilizers and sex hormones—have been found in the drinking water of an estimated 46 million Americans.<sup>17</sup> As a result of these findings, the Environmental Protection Agency issued a list of 13 pharmaceuticals in 2009 as candidates for regulation in drinking water.<sup>6</sup>

*Flushing is recommended but causes environmental contamination.*

The negative outcomes attributed to unused, stored, or improperly disposed medications make implementing a safer more efficient drug disposal system increasingly important.

## **II. Drug Take-back Program Characteristics**

The best form of preventing unintentional poisonings, avoiding the temptation to abuse substances, or minimizing the possibility of environmental contamination due to unused medications is to remove the risk by practicing proper disposal of unused drugs. With the lack of federal and state regulations governing the proper disposal of pharmaceuticals, grassroots community drug take-back programs are

*Take-back programs afford proper drug disposal and remove untoward risks to both the environment and the community.*

emerging and being implemented throughout the nation to address the issue of disposal.

- **The Community Solution.** Currently, the Federal government’s policy solution regarding prescription drug disposal is to provide community funding, such as the Drug Free Community (DFC) grant, to programs in a bottom-up approach to positively impact community-based behavior and environmental change.<sup>8</sup> In fact, research by Avalere Health suggests these grassroots take-back programs are constantly being launched, with over 30 permanent medication-return programs currently in place and one-day medication take-back programs happening across the U.S.<sup>1</sup>

*Community-based programs have the greatest impact.*

- **Advantages of Local Programs.** These local drug disposal take-back programs are convenient and serve as an environmentally friendly and safe option for consumers to remove any unused, expired or unwanted medications from their homes. The recycling of unused hazardous household waste products such as tires, batteries, or oil has become the inspiration that drug disposal take-back programs strive to model themselves after.<sup>17</sup>

*Local programs are convenient and effective.*

- **Outcomes and Challenges Overview.** The drugs collected by officials at permanent return programs or one-day events are disposed of according to EPA-approved methods such as incineration. Despite the many successes these programs are having across the nation, many challenges remain that program officials must face due to legal restrictions concerning the collection of controlled substances. For the future of drug disposal and the future of North Carolinians faced with poisonings, abuse, and environmental threats, the successes and challenges of these programs must be fully examined in order to create and implement an evidenced-based drug disposal take-back program.

*Legal restrictions pose challenges to collection of controlled substances.*

### **III. Challenges Facing Drug Take-back Programs**

Laws and regulations regarding the handling and disposal of controlled substances present the most significant challenge drug take-back

efforts must overcome. State and Federal laws currently require that either a state or local law enforcement officer be present for the disposal of controlled substances.

*A law enforcement officer must be present for disposal of controlled substances.*

- **Controlled Substances Act.** According to the Controlled Substances Act, once a controlled substance has been dispensed to a consumer, the DEA considers that drug to be outside the controlled system and does not permit a pharmacist, doctor, or anyone other than a law enforcement official to collect any of the unused medications. The DEA only allows consumers to return controlled substances to a manufacturer in the event of a recall.<sup>1</sup> The web of regulations set forth not only by the DEA, but the EPA, the Food and Drug Administration (FDA), and the U.S. Postal System significantly impedes collecting unused, expired, or unwanted controlled substances either via take-back events or mail-back programs.

*DEA regulations require collection of controlled substances by a law enforcement officer.*

- **Compliance with Regulations.** To ensure compliance with regulations, take-back events typically require the involvement of many stakeholders, such as the local Drug Enforcement Administration, State Bureau of Investigation, law enforcement agencies, substance abuse coalitions, environmental agencies, and community members. However, coordinating the effort of these multiple stakeholders comes with challenges due to necessity of facilitating the close collaboration required between them and ensuring that the vested interest of each organization is met.

*Collaboration among official agencies provides additional challenges.*

Program officials not only must bring together community volunteers and coalition members but also ensure that law enforcement officers are available for the events. The burden to law enforcement officials for these one-day take-back events includes both time spent for the event as well as time required for the transport and witnessing of the drug destruction via incineration. This commitment impacts and diverts them from their primary law enforcement missions.<sup>1</sup>

*Take-back events particularly burden law enforcement officers.*

- **Required Costs and Resources.** Costs and resources are always a challenge with the funding of any program, and drug disposal take-

*Funding take-back programs is a key challenge.*

back programs are no different. Some proposed permanent disposal programs using secured drop-off bins have costs estimated at over \$300,000. Further, with many different agencies involved in the effort, it can often become unclear as to which agencies provide the funding.

Due to the negative impacts that excess unused medications have on the local community, many opportunities exist for startup grant funding. However, while funding via grants may be an initial solution for the communities that receive them, a successful program that will lead to true policy and environmental change will require a long-term funding base.<sup>18</sup>

- **Local Challenges.** Additional challenges also arise due to the fact that many of the drug take-back programs are being driven from the local community level. Although this grassroots method is effective for reaching the population, the localization of sporadic events can often limit the networking and resources that might otherwise be available. Also, because the events occur independently, lack of one consistent message and a centralized point for data collection in regards to drugs collected are concerns. Having a unified legislative agenda and a universal database to capture the data on drugs gathered from the events would help to both support the need for proper drug disposal and highlight their success.<sup>1</sup>

#### **IV. Successes Supporting Drug Take-back Programs**

Currently, states such as Maine, New Jersey, Washington, Massachusetts, New York, and Michigan are leading the way for introducing legislation and developing local pilot prescription drug take-back programs. Maine and South Carolina provide examples of how state involvement can support the success of local programs.

- **Maine's Program.** Chapter 679 of Maine's Public Law established the state requirement for an Unused Pharmaceutical Disposal Program. Launched in 2007, Maine's drug take-back program allows residents to safely dispose of unwanted

*Long-term funding is required to achieve lasting policy and environmental changes.*

*Challenges also result because take-back programs are local events.*

*Maine and South Carolina demonstrate the potential of successful programs.*

*The successful Maine program uses a mail-back approach.*

pharmaceuticals by providing envelopes to ‘mail-back’ the unused drugs to the state Drug Enforcement Administration (DEA).<sup>19</sup>

Since its implementation, the program has reportedly collected over 380,000 pills and safely destroyed 250 pounds of controlled pharmaceuticals.<sup>19</sup> When surveyed, 46% of program participants reported that had the mail-back program not been in place, they would have flushed the drugs down the toilet. Importantly, many respondents noted that they participated in the program not only to prevent drug diversion and ensure safe disposal, but also especially because they felt this solution was best for the environment.

*The mail-back approach involved many who would not otherwise have participated.*

- **South Carolina’s Program.** Other emerging state and local take-back initiatives include those such as Operation Medicine Drop in York County South Carolina. Such events organize specific days for countywide drug drop-offs. South Carolina’s May 22, 2010 take-back day reportedly collected 165,063 prescription and over-the-counter medications.<sup>20</sup>

*South Carolina uses a countywide approach.*

- **National Organizations.** On the national front, organizations such as Dispose My Meds ([www.disposemy meds.org](http://www.disposemy meds.org)) are providing online information about the safety and environmental impact of unused medications. In addition, this group collaborates with the National Community Pharmacists Association to provide a pharmacy locator identifying local community pharmacies participating in the take-back disposals.<sup>21</sup>

*National organizations are also important to the success of take-back*

Moreover, national authorities, having grown increasingly aware of the successes of the local drug take-back programs, instituted a first-ever National Prescription Drug "Take-Back" Day organized by the Drug Enforcement Administration. This event was held on September 25, 2010 in communities across the U.S. and reportedly collected over 121 tons of unused, expired, or unwanted medications at more than 4,000 collection sites nationwide. Campaign officials considered the national take-back day a ‘stunning’ success, and that it played a key role in cleaning out pills from America’s medicine cabinets.<sup>22</sup>

*The first national drug take-back day was a stunning success, with over 121 tons of unwanted drugs turned in.*

- **State Involvement Is Critical.** With regulations on controlled substances presenting the main obstacle for efforts to dispose of them, the biggest successes have been states and local communities across the U.S. recently passing policies and legislation to allow the surplus pharmaceuticals to be collected in a controlled manner.<sup>23</sup> In fact, in May 2010, the U.S. Attorney General’s office signed a letter of support for two similar bills, one each in the House and Senate (H.R. 1359 and S. 3397, respectively) entitled “Secure and Responsible Drug Disposal Act of 2009.” If passed, these bills would make implementing drug take-back programs not only easier, but also give the issue national priority.<sup>24</sup>

*State policies and legislation have proved critical to success.*

Such legislative successes and positive results from take-back programs strongly support both the need for proper drug disposal and the effectiveness of grassroots state and local level take-back initiatives.

## **V. The Future**

The multitude of negative outcomes attributed to unused, stored, or improperly disposed of medications makes for a complex issue that will require agencies throughout the state of North Carolina to partner together in the effort to effect environmental and policy change. Creating public and legislative awareness and an effective media outreach will prove essential in strategically addressing this critical public health issue. By using a collaborative, multidisciplinary partnership approach to implement a comprehensive take-back solution, the challenges can be overcome, and the future of drug disposal in North Carolina can prove successful.

*Partnering of state agencies will be critical for producing meaningful changes*

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