

## A COMMUNITY PREVENTION INTERVENTION TO REDUCE YOUTH FROM INHALING AND INGESTING HARMFUL LEGAL PRODUCTS

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### ABSTRACT

Youth use of harmful legal products, including inhaling or ingesting everyday household products, prescription drugs, and over-the-counter drugs, constitutes a growing health problem for American society. As such, a single targeted approach to preventing such a drug problem in a community is unlikely to be sufficient to reduce use and abuse at the youth population level. Therefore, the primary focus of this article is on an innovative, comprehensive, community-based prevention intervention. The intervention described here is based upon prior research that has a potential of preventing youth use of alcohol and other legal products. It builds upon three evidence-based prevention interventions from the substance abuse field: community mobilization, environmental strategies, and school-based prevention education intervention. The results of a feasibility project are presented and the description of a planned efficacy trial is discussed.

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## INTRODUCTION

The use of legal products to get high continues to be a serious problem among youth in the United States. The Monitoring the Future national student survey in 2004 indicates that inhalant use in the United States showed an upward turn from the prior year, while use of illicit drugs continued a gradual decline (Johnston, O'Malley, Bachman, & Schulenberg, 2005). Further, the lifetime prevalence rate for inhalant use among 8th graders exceeded the prevalence rate for marijuana, making inhalants the third most commonly used substance for this population, behind alcohol and cigarettes. In 2005, one in 15 students reported using cough or cold medicines to get high in the past year. Inhalant use remained stable (Johnston, O'Malley, Bachman, & Schulenberg, 2006).

Inhalable and ingestible legal products to get high do not constitute a specific type of substance, but rather a constellation of many types of substances found in various products readily available to children and adolescents. Most inhalable products are volatile solvents, comprising liquids that can dissolve a number of other substances including paint thinners, gasoline, and model airplane glue, as well as aerosols, nitrites ("poppers"), and anesthetics (Alberta Alcohol and Drug Abuse Commission, 2004; Center for Substance Abuse Treatment, 2003; Wu, Schlenger, & Ringwalt, 2005). Legal products that can be ingested include over-the-counter medications like cough syrup, antihistamines, and cold medications; prescription drugs like OxyContin; and common household products like cooking extracts, disinfectant liquids, mouthwash, and other products high in ethanol (Banerji & Anderson, 2001; Fleming, McElnay, & Hughes, 2004; Mazor, DesLauriers, & Mycyk, 2005; Pates, McBride, Li, & Ramadan, 2002; Steinman, 2006). Studies indicate that harmful legal products like inhalants are often the first category of substances to be abused by adolescents and thus can constitute a gateway drug (Anderson & Loomis, 2003).

The use of harmful but legal products presents a number of prevention challenges. Many products widely available in retail stores, homes, and schools can be abused and share many characteristics of availability in common with other abused but legal products, alcohol and tobacco, while subjected to few formal controls. The body of prevention research relating to inhalant use and ingesting of legal products is very small (Brouette & Anton, 2001; Delva, Spencer, & Lin, 2000), and notably, no rigorous prevention study that targets the abuse of harmful legal products has appeared in the published literature. Only a few reviews of interventions to prevent inhalant abuse (d'Abbs & Maclean, 2000; Maclean & d'Abbs, 2002) and little prevention effectiveness have been reported (Harwood, 1995).

This article seeks to present an integrated community-based prevention intervention for preventing the use of harmful legal products among youth based upon existing evidence-based prevention programs and strategies that have the potential to prevent youth use of legal products to get high.

**CONCEPTUALIZING A COMMUNITY PREVENTION INTERVENTION**

As with most abused legal substances, total elimination of the use of inhalants and other harmful legal products by youth is unrealistic. As the field of prevention has matured, it has been recognized that any single strategy is unlikely to succeed and a reinforcing set of strategies has the greatest potential to reduce use.

Figure 1 presents a conceptual framework that describes the causal connections among significant variables in the use of harmful legal products. These variables should be addressed by a combination of prevention interventions or recognized as contributing to the actual use of harmful legal products and associated negative consequences.

Five variables are conceptualized as important in reducing youth use of harmful legal products (shown with italics in Figure 1), i.e., Community Readiness, Rules and Regulations, Anti-drug Norms, Social Influence, and Cultural Identity. Community Readiness concerns the extent to which a community can effectively respond to substance abuse problems—like youths’ use of harmful legal products—and act to reduce these problems (Edwards, Jumper-Thurman, Pledsted, Oetting, & Swanson, 2000; Oetting et al., 1995). Rules and Regulations refers to restrictions on the availability of legal abusable products in homes, retail stores, and schools (Edwards & Holder, 2000; Johnson, 1996; Massachusetts Inhalant Abuse Task Force, 2005). Anti-drug Norms refers to the level of concern among retailers, families, and school officials about the use of inhalants and other harmful legal products in the community and support for local actions to prevent use (Birckmayer, Holder, Yacoubian, & Friend, 2004; Commonwealth of Massachusetts Department of Public Health, 2006). Social Influence relates to social pressures from peers, parents, and community which increase or decrease use of harmful legal products (Botvin, Baker, Goldberg, Dusenbury, & Botvin, 1992; Botvin, Schinke, & Orlandi, 1989). Schinke, Tepavac, and Cole (2000) assumed that social influence and cultural relevance were important correlates in designing an effective prevention program for American Indian youth. Cultural identity is a sense of belonging based on a set of attitudes, beliefs, and actions that are shared among people that help to define them as a cohesive group (Cross, Bazron, Dennis, & Isaacs, 1989).

Consistent with these key variables (Figure 1), three evidence-based prevention intervention components are combined to form a comprehensive community prevention intervention to combat youth use of harmful legal products: 1) community mobilization; 2) environmental strategies; and 3) a school-based prevention education. These components are based upon the best available scientific evidence on effective prevention strategies.

**Community Mobilization**

This strategy is designed to increase community readiness and engage communities in prevention activities and actions to reduce use of harmful legal

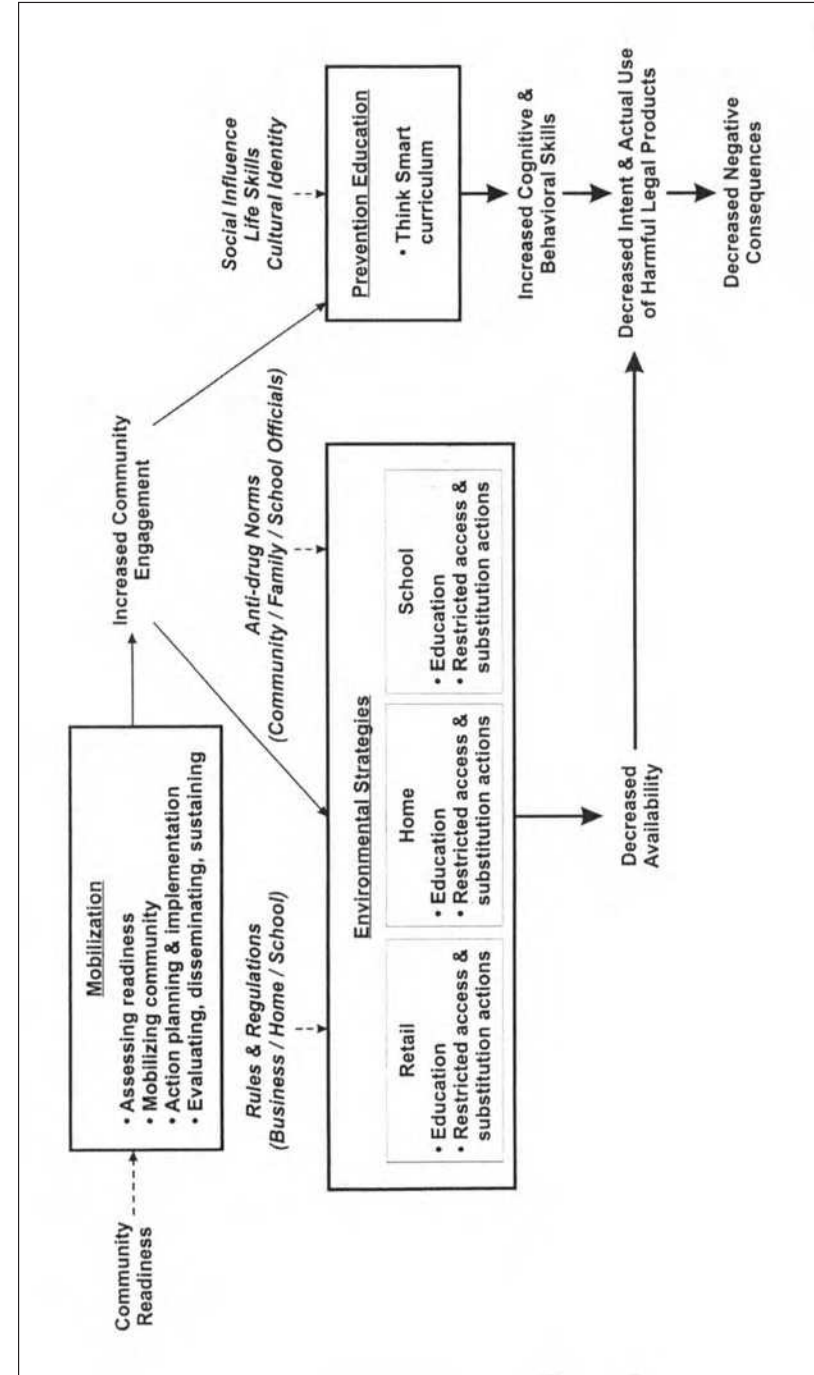


Figure 1. Conceptual framework for the Community Prevention Intervention.

products among youth. Wagenaar et al. (1999), for example, demonstrated via efforts to prevent alcohol abuse that effective community mobilization can support prevention actions and engage more community members. Effective community mobilization is essential to implementing a mutually supportive mix of prevention approaches, i.e., environmental strategies and a school-based prevention curriculum as proposed here.

### **Environmental Strategies**

Environmental Strategies are intended to alter the larger social, physical, and economic environment of a community in order to reduce the harmful use of ATOD (see Babor et al., 2003). Scientific evidence to support the effectiveness of environmental strategies for the reduction of alcohol and drug abuse has developed over the past three decades (Gruenewald, Holder, & Treno, 2003; Holder et al., 1999; Wagenaar, Murray, & Gehan, 2000). In this framework, three environments are targeted: retail stores, homes, and schools. This component is designed to enable retailers, parents, and school officials to take actions intended to reduce the availability of harmful legal products to youth.

### **Prevention Education**

School-based education of youth has a long history as a strategy to reduce child and youth use and abuse of ATOD and is included in this conceptual framework. There is empirical evidence that the Life Skills Training (LST) increases cognitive-behavioral skills, decreases the motivations to use drugs, and decreases vulnerability to social influences that promote drug use (Botvin, Griffin, Diaz, & Ifill-Williams, 2001; Griffin, Botvin, Nichols, & Doyle, 2003). Gilchrist, Schinke, Trimble, and Cvetkovich (1987) found that LST for American Indian youth living in the Pacific Northwest significantly reduced usage of alcohol, marijuana, and inhalants at a six-month follow-up. Life Skills Training (LST) has been adapted for American Indian populations (Raghupathy & Peterson, 2002; Schinke, Moncher, Palleja, Zayas, & Schilling, 1988; Schinke et al., 2000) with demonstrated effectiveness in reducing substance use.

In summary, we assume that if the availability of harmful legal products is reduced and youths' cognitive-behavioral skills are increased, then youth use of these products will decrease. Further, if consumption is reduced, it is hypothesized that there will be a decrease in negative consequences such as illegal activity and substandard school performance and health risks associated with use. Details of the community prevention intervention that we posit can produce positive outcomes are provided below. We also discuss experience and "lessons learned" from a feasibility study sponsored by the National Institute for Drug Abuse in four Alaska communities which regional hubs with populations ranging from 3,500 to 9,000. Two communities are the northern region and two in the southeastern regions of the state.

## **COMMUNITY PREVENTION INTERVENTION COMPONENTS**

The community prevention framework shown in Figure 1 presents the underlying theoretical assumptions of the intervention to reduce the use of harmful legal products. A more detailed view includes the key activities of each component and summary results from the feasibility study mentioned above.

### **Community Mobilization**

#### *Mobilization Strategy*

Wagenaar et al. (1999) have outlined seven steps that serve as a guide for community mobilization: 1) assessing community readiness; 2) building a base; 3) expanding the base; 4) developing a plan of action; 5) implementing the plan of action; 6) seeking feedback and disseminating results; and 7) sustaining the effort (Figure 1).

*Community Readiness Assessment*—The assessment focuses on readiness to combat youths' use of harmful legal products that include inhaling and ingesting these products (Oetting et al., 1995). Nine stages of community readiness have been identified: 1) no awareness; 2) denial/resistance; 3) vague awareness; 4) preplanning; 5) preparation; 6) initiation; 7) stabilization; 8) confirmation/expansion; and 9) high level of community ownership (Plested, Edwards, Jumper-Thurman, 2005). The stage of community readiness can be assessed by asking a small number of knowledgeable members of a community about how a specific health or social issue has been understood and dealt with in the past, and what the prevailing norms surrounding that issue are in the community. The results of the assessment can then be presented to community representatives (including the interviewed stakeholders and relevant coalitions) in order to establish the realistic baseline from which they can move their community toward a position of actively maintaining successful prevention programs.

*Building and Expanding the Base*—Coalitions or partnerships consisting of key leaders, agencies, and organizations provide a substantial base to mobilize the entire community to address a health or social problem (Lewis et al., 1996; MacLean et al., 2003). Coalition capacity-building training and technical assistance should also be provided to strengthen or build coalitions where they are in the early stages of organizing or reorganizing (Florin, Mitchell, & Stevenson, 1993; Mitchell, Florin, & Stevenson, 2002). The base can be expanded by hiring a part-time local community prevention organizer (CPO) who follows a written work plan organized by tasks and due dates to mobilize community members beyond the base. Even a part-time CPO can identify key leaders/supporters to endorse and support the project. Further, each CPO can coordinate

the implementation of a variety of environmental strategies described below that target retailers, parents, and schools.

*Developing and Implementing a Plan of Action*—A community prevention action plan should provide concrete steps and strategies. Media advocacy is an essential aspect of this plan to motivate community policy makers, police, parents, neighborhood members, teachers at local schools, and retail merchants to be involved with community prevention interventions (Holder & Treno, 1997). Media advocacy refers to the strategic use of news media and other local forms of public communication to advance a social or public policy initiative. Unlike specifically designed public information campaigns, which use media to change behavior directly, media advocacy works with local news outlets (radio, television, newspapers, and magazines) and other information sources to increase local news attention to a specific public health problem and solutions.

*Seeking Feedback, Disseminating Results, and Sustaining Effort*—Evaluating and disseminating results are essential to support mobilization and determine whether community change is taking place (Johnson et al., 2003). Moreover, an essential element of a sustainability plan is to share evaluation results with key community leaders and prevention champions (Johnson, Hays, Center, & Daley, 2004). Baseline results on community readiness and capacity-building disseminated to coalitions or partnership members can guide training and technical assistance provided to the coalitions, alliances, and CPOs. Further, baseline results on youth use of harmful legal products can stimulate local interest and, later, evaluation impact results provide information on success (or failure) and whether the intervention components are worth sustaining. Finally, a sustainability strategy that highlights stable interagency structures, formal linkages, resources, prevention, champions, and prevention expertise to continue addressing youths' use of harmful legal products is essential.

#### *Feasibility Study Results*

Community readiness in-person interviews showed the four Alaska communities in a status of denial or vague awareness of the problem of youth's use of legal products to get high. While some community members acknowledged there might be a problem, most did not identify it as a local problem and did not feel anything needed to be done. Post-test readiness results showed significant improvement in community readiness in all four communities suggesting that the mobilization strategy worked (Ogilvie, Moore, Ogilvie, Johnson, Collins, & Shamblen, in review).

### **Environmental Strategies**

Under a public health perspective, environmental factors, such as the availability of substances, are important determinants of youth substance use and

abuse. Birckmayer et al. (2004) suggest that many of the same environmental factors that contribute to alcohol and tobacco use, such as retail availability and price, also affect drug use including legal products which are used to get high. Zimring and Nelson (1995), in reviewing existing econometric studies, found that increasing the tax on cigarettes has been an important method of reducing the prevalence of adolescent tobacco use. Collins et al. (in review) found that the community-level risk factor of "perceived availability of drugs" had the strongest association with inhalant prevalence.

Environmental strategies complement more traditional individualistic approaches in several ways: a) focus on changing community systems rather than individual behavior; b) use the local news media to target community leaders or organizations rather than attempt to change individual behavior through media messages; c) view the community as a resource to mobilize for system change rather than the target group of information disseminators and receivers; and d) seek either to reduce supply or associated risk rather than reduce demand for drugs (Gruenewald et al., 2003).

#### *Retail Environmental Strategy*

The retail-focused strategy includes practical actions for retailers to take in partnership with their community. These actions include: 1) identifying and inventorying high-risk products; 2) developing written store policies regarding sales of harmful legal products; 3) posting warning labels or signs; 4) controlling display and availability; 5) substituting lower-risk products; and 6) restricting sales to youth.

*Action 1*—Identify and inventory high risk products and how they are stored and displayed. Informing retailers is essential to increase the concern among retailers about products they sell which can be abused by youth and lead to serious health and social problems. An inventory achieves several objectives: 1) it provides data on actual legal products available in the community that can be abused by youth; 2) it increases community awareness of substances that are risky; 3) it increases retailers' awareness of products that can be abused by youth; and 4) it establishes a locally unique profile of potentially harmful retail products.

*Action 2*—Develop written store policies about sales of harmful legal products to children and youth. But increased knowledge and concern are not sufficient to actually reduce availability of such products through retail markets. Research indicates that retail establishments with firm and clear policies are more likely to limit sales of harmful legal products (Holder et al., 2000). For example, staff working in an establishment selling alcohol with a written policy of checking ID for all patrons who appear under the age of 30, and a system for monitoring staff compliance, are less likely to sell alcohol to minors. Written policies that are posted for all employees and customers ensure that employees have guidelines

for responsible sales practices and understand that they need to be consistent in carrying out this policy. A written policy also establishes a public and written commitment by the retail store to take positive action to reduce abuse of legal products in their community and provides a clear set of guidelines for restricting sale (see Saltz, 1997a, 1997b; Saltz & Stanghetta, 1997).

*Action 3*—Post warning or sale restrictions labels or signs near harmful legal products. Warning messages convey that the store wishes to limit sales of harmful legal products to and informs adults about potential risks and a justification to customer inconveniences that may occur when they purchase these products. However, the labels or signs must not be such as to discourage purchase altogether and deprive retailers of a sale. On the other hand, such signs (if too specific) can actually help youth identify products with the potential to be used to get “high” and thus actually increase the attractiveness of specific products. Display signs also can state the retailer’s support for the responsible sale of these products, along with the store’s right to refuse sales of harmful legal products.

*Action 4*—Control display and availability of harmful legal products. The retailer can display frequently abused products in sight of shop staff, near checkouts, on high shelves, under the counter, or in locked display cabinets. Retailers can even use dummy containers for display purposes. Controlling access is an established strategy for reducing consumption of substances harmful to health—especially tobacco and alcohol—as well as for harmful legal products. By relocating harmful legal products so that minors do not have easy access to them, retailers reduce the likelihood of sales to minors and shoplifting. Very young buyers, in particular, are less likely to shop for legal products to get high in stores where they have to call attention to themselves by asking a clerk for the product. Many stores commonly relocate to reduce shoplifting.

*Action 5*—Substitute products that cannot be abused for harmful but legal products. A comprehensive community project involving retailers has the potential to make product substitutions of the products themselves without decreasing sales. For example, low-odor dry-erase markers, water-based correction fluid, white glues or glue sticks, and latex paints are common substitutions for solvent-based products. Examples of retailer-focused substitution strategies that have been used in programs in Australia include: 1) substituting gasoline with Avgas/Comgas; 2) using unleaded gasoline to reduce potential brain damage; and 3) adding skunk odor and other deterrents to gasoline (Burns, Currie, Clough, & Wuridjal, 1995). Burns (1996), for example, found that using aviation gasoline (Avgas) for petrol as an aversion strategy was critical in combating inhalant abuse among Aboriginal youth in one Australian community because Avgas caused severe headaches and stomach cramps.

*Action 6*—Restrict the sale of harmful legal products to youth purchasers, especially if there is reason to believe that the products are being purchased in

order to get high. Retailers can monitor purchases of harmful legal products and be prepared to refuse sale of these products to youth purchasers. Communities can provide retailers with information regarding common signs of customer solvent use, tips and suggested responses to customers, and a flow chart for dealing with customers suspected of abusing legal products to get high. Of course, individual communities may establish formal restrictions on the sale of inhalants to adolescents or require locking devices for gasoline. Such formal laws have been criticized as either unworkable (because there are frequent cases of legitimate purchase of these products) or confusing to implement and enforce (Kerner, 1988), but there is evidence in Esmail et al. (1992) that the laws are effective.

#### *Feasibility Study Results*

A retailer guide was provided to all retailers as well as personal visits were used to ensure that retailers were aware of the problem of youth abusing legal products in order to get high, along with training about practical actions that can be taken to limit access to these products by youth. Face-to-face meetings often involving parents and other community leaders were found critically important to engaging retailers as project partners especially when communities are small and team members were generally personally known by the retailer. Baseline and follow-up youth purchase attempts, in which youth aged 12 to 17 years attempted to purchase conspicuous amounts of harmful legal products targeted by the intervention, demonstrated a statistically significant reduction in the ability of children and youth to purchase harmful products (Courser, Collins, Holder, Johnson, & Ogilvie, 2007). A pre/post retailer telephone survey found changes self-reported actions which retailers were taking to reduce the retail availability of harmful legal products (Courser et al., 2007).

#### *Home Environmental Strategy*

Evidence suggests that parental communications about ATOD use are an important component of the prevention strategy within communities (Miller-Day, 2002). Within the home environment, youth may access harmful legal products (Brook et al., 2001; Swahn, Hammig, & Ikeda, 2002) and/or the home may provide a “safe” environment to use these products. This strategy is intended to involve parents and encourage parents to restrict access to harmful legal products, to reinforce parental norms against use, and to strengthen parental strategies for controlling use and access. Overall parental readiness to change may mirror that of the key community leaders but parents may represent a greater diversity regarding readiness to change. Parents who responded to the Parent Nights hosted in the community most likely represent those parents who are most ready to take on the change effort in their community and represent the “early adopters” of change strategies.

On the community level, parents might be encouraged to adopt more changes within their individual households by community support such as making available locking gas caps or other products that might restrict youth access to legal abusable products. The success of parental involvement in community-wide action strategies has been demonstrated with other public safety issues. For example, when communities support centers where parents can have infant and child car seat installation checked, automobile safety for children improves. Less structured community support for parental action can be found as well. For example, if groups of parents discuss their strategies for maintaining an environmentally “safe” home, the informal support from parent-to-parent regarding strategies, tips, and established norms, can create a supportive environment for parents to become more active and engaged in protecting their youth. Specific important parental actions include the following.

*Action 1*—Parents communicate clearly with their children regarding the dangers and problems of using harmful legal substances. Related to the control over the availability of harmful legal products (Action 3) is the need to have clear family rules about using substances to attain a high, and the ability to monitor compliance with these rules (Barnes, Reifman, Farrell, & Dintcheff, 2000; Shillington et al., 2005).

Parents were encouraged to provide clear messages about their own values and beliefs regarding youth use of legal products to get high. In addition, parents were encouraged to establish clear rules and consequences regarding youth use of these substances. During the course of working with families, parents indicated that it is also important to provide rewards or reinforcement when youth adhere to the family rules regarding substance use. This focus was introduced into the family sessions.

*Action 2*—Identify and inventory high-risk products within the home. Legal products that can be abused by youth are commonly found in the home. Inhalants such as gasoline, glue, and solvents are readily available. Over-the-counter and prescription drugs are readily available and parents need to be aware of the potential for abuse if there is to be appropriate monitoring or product substitution. To assist parents in monitoring the availability of these products, a home inventory checklist was created that families may use to assess where products might be in their homes. This inventory could then be used as a practical guide for action step 3.

*Action 3*—Control the availability of harmful legal products in the home and encourage product substitution where feasible. Making parents aware of the variety of legal products that youth can use to get high and encouraging them to do an inventory of the products in their home are part of building “readiness for change.” Parental action is then needed to exercise control over the harmful legal products present within their own home environment. Product substitution can be

encouraged as a strategy for controlling availability in the home for some products. For example, instead of purchasing markers or glues that can be sniffed for a high, non-toxic products can be purchased. Locks and secured access are other methods for controlling availability. For products that are essential to the home, such as gasoline, gas cap locks can be purchased to reduce the risk of youth inhaling the products. For over-the-counter and prescription drugs or alcohol, locked cabinets can be used.

*Action 4*—Advocate the prevention of harmful legal product use among parents in the community. Identifying committed parents who are willing to engage in community-level action to control the use of harmful legal substances is another important step of engaging families in the environmental strategies. Prior examination of the parental role-modeling suggests that parental actions and behavior regarding ATOD use can influence how youth perceive the acceptability of the use of substances (Brody, Ge, Katz, & Arias, 2000). Parental involvement in the larger community actions has not been examined in prior studies. However, parents can provide additional support for environmental strategies and have a vested interest for doing so. For example, parental involvement in working with retailers may be a stronger motivator for retailer involvement than using community organizers alone. Also, parents can support other parents who are working to control the availability of legal products in the home and create solidarity around norms and expectations for their youth. Social availability of legal substances used to attain a high can be reduced by parents agreeing to restrict access in their own homes and ensuring that their youth cannot access these substances in their friends’ homes.

#### *Feasibility Study Results*

Two to three family-nights events were convened in each of the four communities. Both didactic materials about key concepts as well as exercises and parent discussions about their perspectives and experiences were incorporated into the parent sessions. Parents were separated from the youth so that parents could engage in discussions without youth present. Follow-up surveys with family-night participants suggest participating parents had increased awareness of this issue and did adopt strategies suggested in the training (Miller, Johnson, Keagy, & Shepherd, in review).

#### *School Environmental Strategy*

Schools use a wide range of supplies which have the potential to be inhaled and thus abused including paints, glues, correction fluid, other solvents, concentrated alcohol products (including cleaners) and many others. Some potentially abusable products can be found in typical classrooms, while others in specialized classes (e.g., shop or vocational classes, art classes, and others) as well as cafeterias,

storage closets, or janitorial areas. Potentially harmful legal products at school have a wide range, from vanilla extract to Lysol to dusting sprays.

While there is little scientific literature specifically related to the restriction of abusable products within the school environment, that is evidence that substance abuse at school may be correlated with individual inhalant prevalence (see Collins et al., 2006, in review). Commonwealth of Massachusetts Department of Public Health (2006) notes that schools should (among other things): review purchases of school supplies; substitute safer products where possible; institute policies that ban materials that may be inhaled; and provide information to faculty, staff, and school nurses via in-service trainings and printed material about the dangers of inhalants. School policy and other changes in the school environment to prevent inhalant abuse (as well as, presumably, abuse of other harmful yet legal products) are consistent with a trend recently noted by Weiss (2005). A baseline student survey data from four Alaska communities showed that between 48% and 91% of students responded that it would be “sort of easy” or “very easy” to obtain four different types of products in the school setting (if they wanted to obtain them for the purpose of getting high) (Saylor, Fair, Deike-Sims, Johnson, & Ogilvie, in press).

The school environmental strategy parallels and supports the home and retail environmental strategies and is designed to promote practical actions to restrict availability of legal but potentially abusable products at school.

*Action 1*—As with the retail environment, it is critical to identify high-risk products within the school environment as well as determining how they are stored and may be accessed. In the school environment, however (more than in the retail store environment), staff must also be aware of products that may be brought onto school grounds for the purpose of getting high.

*Action 2*—Guidelines for the appropriate and safe use of harmful legal products within the school environment are essential. Examples of guidelines might be that student use of potentially abusable products used in art classes (such as spray adhesives or spray paints) or in general classes (e.g., correction fluid) be restricted to specific class projects or situations where their use is appropriately monitored by the teacher or other responsible school staff person.

*Action 3*—Placing limits on availability of legal products within the school environment that youth may use to get high can occur through enforcement of safe use of products, the careful placement of products within the classroom or other school location (e.g., cafeteria, janitorial closet) to deter use to get high, and the monitoring of use of products. For example, an art teacher might work to: 1) develop guidelines appropriate to the products used in his or her classroom; 2) place the products so that student access is limited; and 3) monitor on a regularly scheduled basis what quantity of a given harmful product is in the art classroom.

*Action 4*—Substitution of safer alternative products has been mentioned earlier in the context of retail availability. Substitution of safer alternative products is particularly important among school staff who are responsible for ordering classroom supplies for the school or the school district. For example, safer non-toxic correction fluid or odorless markers may be ordered as a matter of policy. In shop or mechanical classes (in which many potentially abusable products are typically available, including propane, gasoline, varnishes, rubber cement, wood stains, and many others), substituting products or using additives may play a role in deterring abuse of school products.

#### *Feasibility Study Results*

In-service training was used to educate school staff and consisted of an approximately 90-minute training module that focused on increasing knowledge about harmful products, changes norms, and identify specific actions that will restrict students' access to harmful products. One lesson learned was that a routine school inventory of potentially harmful products is needed. Follow-up technical assistance by a third party agency is also needed to help reinforce messages of the in-service training. Pre- and post-surveys of staff found that one-third reported taking three or more new actions; one-fifth, one or two new actions; and one-quarter, no new actions. On average, respondents reported taking two new actions, suggesting school personnel did adopt some the strategies discussed in the in-service.

#### **School-Based Youth Prevention Education**

This component of a community prevention intervention is concerned with demand reduction involving the host, i.e., the reduction of youth desire for/use of harmful legal products (Figure 1). The primary means of intervention is school-based education concerned with information about risks and local norms, as well as life skills, for resisting social influences to inhale or ingest harmful legal products. These skills are taught using a combination of didactic techniques including demonstration, behavioral rehearsal, feedback and reinforcement, and behavioral homework assignments. Information is also imparted to reinforce non-drug-use norms and to lessen pro-drug normative expectations (Botvin et al., 2001; Griffin et al., 2003).

#### *Think Smart Curriculum*

*Think Smart* (Ogilvie, Coulehan, Ogilvie, & Johnson, 2006) is a modified form of *the Personal Intervention Curriculum* (Schinke, Tepavac, & Cole, 2000) as adapted from LST for rural populations in the Pacific Northwest. The curriculum addresses risk factors associated with youth substance abuse and builds protective factors in pre-adolescents (Hawkins, Catalano, & Arthur, 2002). The risk

factors associated with substance abuse that are addressed in this curriculum include social influences (peer pressure), interpersonal factors (i.e., poor communication or social skills), and intrapersonal factors (i.e., poor decision-making skills or low self-esteem). Bicultural competence is also addressed, primarily by discussing values and beliefs that help the students make decisions. Some studies have identified biculturalism as a risk factor (Epstein, Botvin, & Diaz, 2001), and others as a protective factor (Carvajal, Photiades, Evans, & Nash, 1997; Farver, Bhadha, & Narang, 2002). Schinke, Tepavac, and Cole (2000) and Raghupathy and Peterson (2002) found that bicultural competence skills led to the reduction of substance use among American-Indian adolescents.

This curriculum involves 10 core lessons, with an introductory lesson and a celebratory lesson to complete in the fall semester. Three booster lessons are designed to be completed three months after completion of the core content. Lessons are 60 minutes in duration and can be taught once or twice a week. The inclusion of boosters extends and further reinforces the learning to increase the effects. Lessons are didactic, teaching information about the effects of drug and alcohol use, as well as interactive, affording frequent opportunities for interaction between students. Role-plays, games, and other interactions allow students to apply the new information and practice new skills

#### *Feasibility Study Results*

The teachers' self-reports of implementation fidelity via two observers ranged from 63% to 95% implemented as designed (content and delivery). Observer reports ranged from 69% to 98%. These results provide evidence of moderate to high fidelity in the implementation of the *Think Smart* curriculum. Comparing pre- and post-proximal outcomes of the *Think Smart* curriculum, we found positive change in the cognitive skills but not behavioral skills among students (5th and 6th graders) who participated in the *Think Smart* curriculum. Lessons learned have led to revisions in the curriculum for an anticipated efficacy trial described below.

### **CONCLUSIONS AND FUTURE RESEARCH**

To combat youth's use of everyday retail products to get high, an integrated community prevention intervention is needed. This intervention must integrate the key elements of community mobilization, environmental intervention in retail shops, home, and school, as well as classroom education. This community-focused prevention intervention, unlike single-targeted prevention programs, is designed to increase community involvement, to stimulate the implementation of environmental strategies to reduce the availability of potentially abusable legal products, and to increase cognitive and behavioral skills among students. Both reduced availability and students' increased cognitive and behavioral skills

are expected to decrease the intent to and actual use of harmful legal products, which will decrease negative consequences. In some respects, the community intervention addresses both the supply and demand side of the abuse problem in complementary fashion.

The intervention described is rooted in evidenced-based substance abuse prevention interventions that have been developed and tested in a variety of community settings. Further, the intervention is based on lessons learned in the on-going that is described above. The next step is to empirically test this community prevention intervention under controlled conditions as an efficacy trial. In such a trial, the distal outcomes should include youth's use of legal products to get high, and related problems which derive from legal product abuse. The proximal outcomes should include: a) availability of potentially harmful legal products in retail stores (based upon actual youth purchase attempts) in homes (based upon parent interviews about family actions to reduce availability) and in schools (based upon school product inventories and school staff interviews about actions taken to reduce student access); b) youth perceived availability of harmful legal products in retail stores, home, and school (based upon student self report surveys); and c) and cognitive and behavioral skills of youth to deal with the pressures to use harmful legal products.

The community prevention intervention described in this article provides, to our knowledge, the first detailed design of a prevention effort to reduce youth abuse of legal products which is based upon evidence-based strategies. The feasibility test of this design in Alaskan communities has demonstrated the practical and potential effectiveness of such a comprehensive and mutually supporting strategy set which should next be tested for efficacy using the standards described above.

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