Doc 9654
AN/945

Manual on Prevention of Problematic Use of Substances in the Aviation Workplace

Approved by the Secretary General and published under his authority

First Edition — 1995

International Civil Aviation Organization

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AMENDMENTS

The issue of amendments is announced regularly in the *ICAO Journal* and in the monthly *Supplement to the Catalogue of ICAO Publications and Audio Visual Training Aids*, which holders of this publication should consult. The space below is provided to keep a record of such amendments.

RECORD OF AMENDMENTS AND CORRIGENDA

AMENDMENTS			
No.	Date applicable	Date entered	Entered by

CORRIGENDA			
No.	Date of issue	Date entered	Entered by

Foreword

The global spread of psychoactive substances, their general availability, and the ever-increasing number of addictive users are in many States seen as a threat to society and sometimes also as a threat to aviation safety. By 1991, eleven States had reported to ICAO that they had encountered problems with substance abuse, mainly alcoholism, within the aviation workplace.

The purpose of this document — *Manual on Prevention of Problematic Use of Substances in the Aviation Workplace* — is to provide States with a tool for decision-makers to use when deciding on the best policy for their States and for State licensing authorities when planning national strategies; at the same time, airlines and other employers can use this document to implement, on a practical level, established policies and strategies in a cost-effective way, with due regard for both aviation safety and the welfare of their employees.

The manual is organized into five chapters: Introduction; Education of the Aviation Workforce; Identification, Treatment and Rehabilitation; Employment Consequences of Problematic Substance Use; and Biochemical Testing Programmes, followed by several attachments providing examples of comprehensive prevention programmes and detailed procedures as well as general information and advice. The samples given in the attachments are partly generic, partly taken from existing programmes currently in use in States.

The document has been developed by the Aviation Medicine Section of the Secretariat with the assistance of an international study group. The majority of this study group felt that the term "problematic use of substances" (also commonly referred to as "problematic substance use") was better, more precise and less judgemental than the term "substance abuse" which is currently in common use, as this latter term in some States may have connotations of criminal or immoral activity and may prove difficult to translate in some languages. Further, in the context of aviation, even the **use** of substances (as when prescribed by a physician or when taken in accordance with established medical practice or, for alcohol, when consumed in harmony with current social conventions) may present a danger to aviation safety and consequently be problematic.

Comments on this manual from States and other parties outside ICAO would be appreciated. They should be addressed to:

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Definitions

Many terms exist for problematic use of alcohol and other drugs: hazardous use, harmful use, misuse, abuse, dependence, addiction, and many more. For the purpose of this document, the following terms and definitions will be used:

Problematic use of substances or ***problematic substance use*** is the use of one or more psychoactive substances by aviation personnel in a way that:

a) constitutes a direct hazard to the user or endangers the lives, health, or welfare of others; and/or

b) causes or worsens an occupational, social, mental, or physical problem or disorder.

Problematic substance use intervention consists of actions aimed at nullifying or minimizing the psychological, physiological, medical, occupational, operational, and/or social consequences of problematic substance use, especially those adversely affecting safety in the aviation workplace.

Problematic substance use prevention consists of the actions necessary to preclude problematic substance users from being employed within the safety-sensitive areas of aviation and the actions aimed at deterring safety-sensitive aviation personnel from engaging in problematic substance use.

Psychoactive substances considered in this document are: alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other stimulants, hallucinogens, and volatile solvents. The document does not consider tobacco or caffeine.[1]

Safety-sensitive employees are persons who might endanger aviation safety if they perform their duties and functions improperly. This definition includes, but is not limited to, technical air crew, cabin crew, aircraft maintenance personnel, air traffic controllers, and security screeners.

1. In the ICD-10 classification of Mental and Behavioural Disorders, WHO, Geneva 1992, both tobacco and caffeine are listed as psychoactive substances.

In this document, the use of the male gender should be understood to include both male and female persons, except where inappropriate.

Chapter 1

INTRODUCTION

A characteristic feature of the international drug scene – which also applies to alcohol – is a trend toward "harmonization" of abuse patterns across national and cultural boundaries.

(Torbjørn Mørk)[1]

1.1 Aviation workers have a special obligation to ensure that they are capable of performing their duties to the best of their abilities. Similarly, aviation regulatory authorities and industry employers have a special obligation to ensure that aviation safety is maintained at a high level and that precautions necessary to achieve this are implemented. Because unsafe aviation holds the potential for catastrophic consequences, civil aviation is among the most highly regulated industries in the world. Through the efforts of the International Civil Aviation Organization (ICAO), often working together with other international organizations, uniform requirements for aviation safety, including licensing, training, operation, navigation, and other safety-relevant aspects of aviation have been developed and accepted throughout the world.

1.2 In addressing the issue of problematic use of substances by aviation workers, ICAO has not focused on the legality of drug or alcohol use, nor on the moral or religious concerns that such use might raise. It is recognized, for example, that in some countries alcohol consumption is illegal, in others it is legal but provokes social contempt, while in still others it is both legal and socially acceptable. Certainly, regulatory agencies and employers will want to take into consideration the legality or illegality of conduct in determining what preventive steps to take or sanctions to impose on an employee with a substance use problem. The measures recommended in this manual are, however, based on more fundamental precepts — underlying points that are constant, regardless of religion, traditions, culture and national law. These precepts are:

— that the nature of aviation places a special responsibility on aviation workers, employers, regulators and governments to protect public safety and prevent harm;

— that any psychoactive substance has the potential for creating mental and physical problems in the user; and

— that any use of psychoactive substances which may negatively affect the performance of safety-related aviation duties has the potential for doing harm.

Accepting these precepts, ICAO has decided to recommend measures that focus on:

— preventing the problematic use of substances by aviation workers; and

— preventing the adverse effects of problematic substance use from threatening the aviation workplace.

1.3 It should be noted that this manual also addresses the use of drugs (whether prescribed or over-the-counter) for appropriate medical purposes, if the use of such drugs in the workplace poses a risk to aviation safety, to the employee himself or to his co-workers. Even the therapeutically indicated use of some drugs can adversely affect performance, as is discussed in detail in Chapter 13 of the *Manual of Civil Aviation Medicine* (reprinted at Attachment F). In addition to the prevention efforts that will be addressed in this document, and which are specific for the aviation workplace, governments and regulatory agencies should consider steps to ensure that pharmaceutical manufacturers, clinical practitioners, and pharmacists properly ascertain and convey information regarding the possible impairing effects of medication use on the safe performance of workplace functions.

1. In "Alcohol and Drugs in an International Perspective", Proceedings of the 35th International Congress on Alcoholism and Drug Dependence, 1988, Oslo, Norway.

1.4 Problematic substance use has been an issue of importance to ICAO for many years, although most of the attention has focused flight crew members and air traffic controllers, the occupational categories most immediately critical to the safe operation of aircraft. ICAO Standards and Recommended Practices (SARPs) contain the following relevant and longstanding provisions.

1.5 With respect to medical fitness, Annex 1 contains, in 1.2.6.1, a Standard according to which "license holders shall not exercise the privileges of their licenses and related ratings at any time when they are aware of any decrease in their medical fitness which might render them unable to safely exercise these privileges." In 1.2.6.1.1, a Recommendation is addressed to all Contracting States which "should, as far as practicable, ensure that license holders do not exercise the privileges of their licenses and related ratings during any period in which their medical fitness has, from any cause, decreased to an extent that would have prevented the issue or renewal of their Medical Assessment."

1.6 Paragraph 6.2.2 provides the Standard on the physical and mental requirement for any class of Medical Assessment and makes it mandatory for an applicant for a license or its renewal to be free of, *inter alia*, "any active, latent, acute or chronic disability ... such as would entail a degree of functional incapacity which is likely to interfere with the safe operation of an aircraft or with the safe performance of duties." In accordance with 6.3.2.2 (Class 1 Medical Assessment for applicants for or holders of commercial pilot licenses, airline transport pilot licenses, flight navigator and flight engineer licenses), 6.4.2.2 (Class 2 Medical Assessment for private pilot licenses and glider and free balloon pilot licenses) and 6.5.2.2 (Class 3 Medical Assessment for air traffic controller licenses), the applicant shall not have an "established medical history or clinical diagnosis of ... alcoholism, drug dependence ... such as might render the applicant unable to safely exercise the privileges of the license applied for or held ..."

1.7 Annex 6, Part II, 4.12 deals with the fitness of flight crew members and states that "the pilot-in-command shall be responsible for ensuring that a flight: a) will not be commenced if any flight crew member is incapacitated from performing his duties by any cause such as injury, sickness, fatigue, the effects of alcohol or drugs; b) will not be continued beyond the nearest suitable aerodrome when flight crew members' capacity to perform functions is significantly reduced by impairment of faculties from causes such as fatigue, sickness, lack of oxygen."

1.8 Finally, in Annex 2, 2.5, on the use of intoxicating liquor, narcotics or drugs, it is prescribed categorically that "no person shall pilot an aircraft, or act as a flight crew member of an aircraft, while under the influence of intoxicating liquor or any narcotic or drug, by reason of which his capacity so to act is impaired."

1.9 In the *Manual of Civil Aviation Medicine* (Doc 8984), aviation medical examiners have been provided with specific guidance regarding drug and alcohol use and the identification of potential disqualifying conditions. Relevant sections from that manual are reprinted in Attachment F.

1.10 The importance of preventing the problematic use of substances was reiterated in the report of the United Nations-sponsored International Conference on Drug Abuse and Illicit Trafficking (1987). Target 4 of the "Comprehensive Multidisciplinary Outline of Future Activities in Drug Abuse Control" proposed activities for promoting workplace substance use prevention. In the report, it was noted that "drug abuse by individuals in a wide range of sensitive occupations can result in disaster." Most speakers who referred to this issue specifically noted pilots and air traffic controllers as examples of individuals where impairment of performance could have disastrous consequences. In light of Target 4, ICAO began a review of problematic substance use trends in civil aviation. In 1988, ICAO's Air Navigation Commission determined that there was not an identified problem with drug abuse by flight crew members or air traffic controllers. ICAO continued to monitor the issue, however, and by 1991, eleven States reported in response to an ICAO survey that they had had some problem with problematic substance use in civil aviation, while sixteen reported that they had instituted or were considering measures to address possible substance use problems.

1.11 The ICAO General Assembly responded by adopting Resolution A29-16, "Role of ICAO in the prevention of substance abuse in the workplace." (As evident from the title, the resolution uses the term "substance abuse" rather than the term "problematic use of substances" which is used in this manual. However, the meaning and intended scope of the two terms are essentially the same.) The resolution states:

> *Whereas* Assembly Resolution A27-12 urged the Council to elaborate with a high degree of priority concrete measures to prevent and eliminate substance abuse by crew members, air traffic controllers, mechanics, and other staff of international civil aviation, and requested the Council, following further study, to propose specific measures concerning drug-related problems in international civil aviation;

Whereas substance abuse by civil aviation employees may seriously compromise aviation safety;

Whereas ICAO has initiated concrete actions to develop measures to ensure that civil aviation workplaces are free of substance abuse by expediting the development of additional guidance material with emphasis on educational programmes related to prevention of substance abuse;

Whereas the Air Navigation Commission requested the Secretariat to expedite the development of additional guidance material; and

Whereas it is incumbent upon the international civil aviation community to ensure that civil aviation employees are aware of the dangers posed by substance abuse;

The Assembly:

1. *Declares* its strong support for making and maintaining civil aviation workplaces free of substance abuse and encourages cooperative efforts throughout the international civil aviation community to educate employees on the dangers of substance abuse and to take steps, when deemed necessary, to detect and deter such use, and, through such efforts, to ensure that substance abuse never becomes prevalent or tolerated within international civil aviation;

2. *Urges* the Council to accord a high degree of priority, as contemplated in Resolution A27-12, in the Technical Work Programme, to expediting the development and publication of guidance material containing measures which may be implemented by Contracting States and to conducting or arranging such symposia or seminars as necessary to assist and educate Contracting States to maintain civil aviation workplaces free from the threat of substance abuse;

3. *Requests* the Council to continue its effort to monitor:

a) the existence and growth of the threat to the safety of international civil aviation posed by substance abuse; and

b) efforts by Contracting States to implement preventive measures; and

4. *Requests* the Council to present a report on the implementation of this Resolution to the next ordinary session of the Assembly.

1.12 As reflected in the first operative clause, the Assembly adopted this resolution not because a pronounced substance use problem has been found to exist in international civil aviation, but to ensure that such a problem is never allowed to develop. The resolution also reflects the current reality that substance use of varying kinds is present as a real and international problem in society at large. This is the environment from which aviation workers are drawn and it would be naive to assume that the aviation workplace is in any way insulated from the surrounding society and thus protected against the threat of problematic substance use.

1.13 Next to the effect on safety, the most significant threat that problematic substance use poses to civil aviation is the loss of public trust. The aviation industry cannot operate without the fundamental belief on the part of consumers that the aircraft on which they, their families, or their property will travel is maintained and operated safely. It would indeed be unwise to disregard any precaution necessary to maintain that trust.

1.14 A variety of prevention strategies exist internationally which focus on a number of different target populations. Few of these programmes adequately address the needs of the aviation industry. This manual will focus on one model which appears to be easily adaptable to the aviation workplace: ***the employee assistance programme model***. In accordance with ICAO's general aim to provide uniformity and harmony in international aviation operations, it has been deemed appropriate to compile practical information on a range of related topics that are targeted specifically for the aviation workplace, based on the specific model adopted. Not all the tools discussed in this manual may be useful in all circumstances, but whenever preventive measures are considered by governments, aviation regulatory authorities or employers, consistency in application is of utmost importance.

1.15 As was noted above, most people recognize the potential for catastrophic consequences if certain aviation employees perform their duties while impaired. The hugely complex tasks associated with today's commercial aviation make it absolutely essential that safety-sensitive employees perform at the optimum of their abilities during their work life. Although comprehensive, worldwide accident investigative data are available, full medical and toxicological examinations have not been performed in all cases. Based on the incomplete data at hand, it does appear, however, that only a few accidents involving commercial aircraft were caused by pilots or controllers impaired by substance use. That should not be taken to mean that the potential for such a catastrophe does not exist. Aviation workers do not operate in professional isolation, but rather as part of an increasingly integrated workplace. Poorly repaired avionics equipment or improperly performed emergency evacuation procedures can have drastic consequences. Especially in international aviation, it is fair to say that the responsibility for hundreds of human lives and vast quantities of valuable property resting with safety-sensitive personnel in civil aviation operations makes it imperative that these workers perform their duties in a professional manner and without any impairment in performance due to substance use.

1.16 The costs associated with substance use are not limited to the costs of accidents, although those are the most obvious and dramatic. Employee dependence on

alcohol or other drugs can lead to increased labour costs caused by absenteeism and use of medical benefits, theft of property, and decreased employee morale and productivity. Each of these costs may be reduced or avoided by effective prevention strategies.

1.17 Although prevention and occupational health form integral parts of aviation medicine and the concept of preventive measures has been supported by ICAO for many years, it may still be novel to some States to apply substance use prevention efforts to the aviation workplace. It is therefore important to set forth some of the guiding principles of ICAO's actions.

1.18 ICAO has no cause to believe that problematic use of substances is currently widespread in civil aviation, but increasing use of psychoactive substances in society poses a threat to maintaining today's level of aviation safety. Fortunately, while it is true that in some transportation sectors the nature and extent of alcohol and drug problems in the workplace may reflect those in the general community within the same age group, to date it appears that even in high-prevalence populations, aviation workplaces show only limited signs of such problems. It is clear, however, that active steps must be taken to protect and promote safety.

1.19 It is necessary that aviation regulators and employers recognize that substance use is a pandemic affecting most if not all parts of the world. Aviation regulators and employers must be able to assess with accuracy not only whether a problem exists in their respective aviation environments, but also whether substance use is prevalent in the larger society surrounding those environments. Following a realistic assessment of their environment and their resources, States and employers should be encouraged to take the steps necessary and appropriate to prevent problematic substance use in the aviation workplace and thus ensure that the current high level of safety in international civil aviation is maintained.

1.20 One of the most common barriers to the success of a prevention programme is ***denial***. Individuals may deny that they have substance use problems, companies may deny that any of their employees have such problems and may even disregard the possibility of such a problem arising within the company, and regulators may deny or be unable to believe that the aviation workplace in their country is or can be affected. Later sections of this manual will address overcoming such denial; it is important, however, to recognize the difficulties presented by institutional denial or disbelief. The notion that some aviation employees intentionally behave in a way that can threaten aviation safety is contrary to the most basic tenets of civil aviation operations and is therefore difficult for many people to assimilate. Still, any employee may be susceptible to the pressures and influences of the professional and social environment or certain life events and it would be dangerous to presume that aviation is not vulnerable to the consequences of these pressures and influences. Preventive efforts should not be delayed until a significant problem has been identified. Responding only after an accident has occurred or public trust has been broken defeats the purpose of prevention.

1.21 If it is determined that in a particular environment the potential exists for substance use to affect the safety of civil aviation, it must be determined what preventive measures should be instituted to ensure that the potential does not become a disastrous reality.

1.22 The remainder of this document contains guidance on a number of topics relevant to the prevention of problematic substance use. These topics are:

Education of the workforce (Chapter 2). Experts from around the world agree that education is the single most important tool in preventing problematic use of substances. Consequently, employees need to be fully aware of the effects that substance use may have on their lives, jobs, and public safety.

Identification, treatment and rehabilitation (Chapter 3). Any programme designed to address problematic substance use in the workplace must also consider the individual user. This section discusses ways to identify employees with a substance use problem, and gives guidance on treatment and rehabilitation modalities.

Employment consequences of problematic use of substances (Chapter 4). This section provides guidance on issues that must be considered when establishing a prevention programme that concerns the interrelationship between substance use and health qualifications; it gives guidance on how to establish policies with regard to returning employees to duty after treatment; and on how to manage the employment conditions and the workplace requirements when a substance use problem has been identified.

Biochemical testing (Chapter 5.) With the exception of post-accident toxicology,[2] biochemical testing is not

2. See Annex 13, Chapter 5, 5.9 (autopsy examinations).

a general requirement. Not all workplace conditions dictate the implementation of such a testing programme; it should, however, be recognized that in appropriate circumstances biochemical testing can be a useful part of a prevention programme. This section therefore provides guidance in determining whether biochemical testing should be instituted. Additionally, because it is vital that such programmes, if established, are conducted properly, the section includes information on the many issues associated with implementation of a testing programme.

1.23 In addition to guidance on prevention programming, samples of practical assessment and implementation tools are attached to this document. All of this material is designed to be used and adapted in any environment that requires the implementation of a health and safety promotion programme related to the problematic use of substances in the aviation industry by any safety-sensitive employees. The information is provided with the recognition that any actions chosen by a government, regulatory authority, or employer may need further adjustment to meet particular needs.

1.24 Finally, of critical importance in establishing any programme is the need to ensure that adequate advance strategic planning occurs prior to any attempt to utilize the guidance contained in this document. Therefore, a strategic planning outline is included in the attachments. This outline should be used in conjunction with the substantive information provided throughout this document.

Chapter 2

EDUCATION OF THE AVIATION WORKFORCE

2.1 While any person might be able to deduce that it is inappropriate to work while intoxicated, the more subtle aspects of problematic substance use are not so apparent. No person, therefore, can make appropriate lifestyle and behaviour choices unless adequately educated. Information about signs of possible problems, degrees of impairment short of overt intoxication, and hazards posed by problematic use of substances must be conveyed to the workforce — including managers and supervisors. In some cultural settings where use of alcohol or other drugs in the workplace is accepted (drinking beer at lunch, for example), the workforce must be advised of the possible hazards posed by even seemingly innocuous behaviour.

2.2 Employees and aviation employers should be cognizant of the possible effects of medications and take action to ensure that aviation safety is not jeopardized. Unlike other forms of substance use, however, the therapeutic use of a medication will often include the intervention of a healthcare professional who will usually, especially if aware of the patient's occupation, advise of any adverse effects of the drug including interactions with alcohol or other chemicals. Labelling requirements to warn about effects of over-the-counter medications are also becoming more widely instituted.

2.3 Successful educational programmes that seek to limit substance use acknowledge the environmental and personal influences that encourage use. Clearly the attitudes and behaviour of key people in the employees' lives must be recognized, as well as the role of the media and the pressures of the work situation. A comprehensive educational programme would offer employees basic information on the physical, emotional, and social causes and consequences of substance use and the development of problematic use, raise awareness of the environmental pressures that encourage substance use in general, and provide the individual the opportunity to develop counter- arguments and skills to identify and resist pressure to use substances. It would also offer information on types of treatment and rehabilitation and on ways to return to the workplace.

2.4 Workforce education can occur in formal settings like classrooms or workshops, using methods such as lectures, laboratory experiments, discussions, recitations and testing. Generally these methods involve an expert who provides information to a passive audience of students. In the past twenty years, however, educators have recognized the benefit of interactive learning methods which in turn has lead to a recognition of other educational techniques. Peer education, for example, in which certain employees are trained to return to the workplace and provide information and assistance to co-workers, is highly effective if properly managed.

2.5 Although formal information delivery or provision of the facts about a psychoactive substance has been seen as a primary means of educating for individual behaviour change, caution should be used in relying solely on the dissemination of information which may have a limited effect on attitude or behaviour. ***In fact, information alone, especially if it over-emphasizes the primary effects of the substance, may actually increase substance use by stimulating curiosity and the desire to experiment.*** To the extent possible, involvement of the target population should be encouraged through the use of group discussions, role-playing and other active learning tools. Where methods other than these are needed or required, education can also be provided through videotaped presentations, distribution of written materials, displays of information in the worksite, and notices placed with pay slips.

2.6 The limitation of substance use in the aviation workplace depends on social and psychological skills reflecting certain attitudes, beliefs and behaviours. It is essential that resources which assist in the development of these are made readily available, as access to health, welfare, educational and vocational services can help the individual cope with life stresses and deal with difficult situations without resorting to substance use. The content and format of any education programme must be carefully evaluated to determine its validity, utility, appropriateness, cultural sensitivity and impact within the community.

2.7 With respect to aviation employees, then, it is essential that educational programmes relating to the problematic use of substances not only provide information on alcohol or other drugs that might affect these employees, but also make the information relevant. This goal is more easily accomplished in aviation than in many other social or occupational settings because the aviation industry already has a culture of safety into which education about substance use neatly fits. The highly regulated nature of virtually every activity in aviation sends constant messages to aviation employees that lives and property rely on employees' performance of duties. Despite the emotional responses that the issue of problematic substance use sometimes raises, it is really just another aspect of the obligation shared by the entire industry to ensure safety. Just as skills must be maintained, necessary tools kept available and appropriate materials used, physical and mental faculties must be kept unimpaired. **That** is the context in which education of the workforce needs to be set, and the preventive message must be repeatedly conveyed to ensure its integration into the general framework of the aviation workplace.

2.8 No educational effort can succeed, however, without a concomitant commitment by the government, regulatory agency or employer prescribing or providing the education. The information must be conveyed against a background of regulation or policy that indicates the importance placed on ensuring that aviation safety, including this element thereof, is maintained. A *pro forma* distribution of minimal information simply indicating that "problematic substance use is bad" is unlikely to have any benefit and may even reinforce inappropriate behaviour by employees or increase tolerance of such behaviour by co-workers or supervisors. Additionally, it is vital that employers establish and maintain workplaces that are free from subtle messages indicating that problematic use of substances is condoned — for example, all levels of management should demonstrate their commitment to safety by avoiding the message conveyed by such situations as the serving of alcoholic beverages with meals during duty time.

2.9 As mentioned above, the methods for providing educational information to employees will vary, depending on State requirements and needs. The medium used to provide the education and the content will vary, depending on the resources available and the context in which the education will be provided. Regardless of the methodology chosen, educational efforts will work best when they are integrated into the workplace. Messages about the prevention of problematic use of substances should be added to routine safety-related training or information dissemination; this will emphasize that prevention is just another aspect of the need to ensure that public and workplace safety are maintained.

2.10 As with any safety issue, the education should also include information regarding the consequences of engaging in problematic substance use. This information should address employment and health consequences, as well as the potential consequences to the industry or company. If any data are available regarding the costs to the relevant society, national aviation industry, or company, these data should be conveyed to employees. Employees should be advised about actual or potential increases in customer complaints caused by employees impaired by substance use or hangovers, about expenditures of management time to deal with affected employees, and about possible losses of competitiveness and profits.

2.11 It is also important to ensure that all employees, regardless of their organizational positions, are adequately trained to recognize potential problems and know the established procedures for addressing them. Co-workers, including supervisors, will often be the first to recognize decrements in an employee's performance. Although they need not be diagnosticians, co-workers and supervisors, if properly trained, may be able to ascertain if substance use could be a factor in declining performance.

2.12 Even if co-workers or supervisors are aware that colleagues are engaging in problematic substance use, however, they may be reluctant to take action. In some workplaces, especially those that do not provide for rehabilitation, such reluctance reflects a desire to protect workers from employment consequences or the stigma associated with problematic substance use. A supervisor might ignore declining performance or, if the problem becomes overt, simply send the person home to "sleep it off". There may also be a cultural predisposition to tolerate or even participate in actions that could be contrary to safety (e.g. drinking alcoholic beverages during lunch). Educational efforts should be designed to overcome both the reluctance to take action and the environmental factors that might foster problematic substance use. As an outcome of education, awareness of problematic substance use should be raised and all employees encouraged to report declining performance in accordance with the mechanisms established to ensure that intervention takes place.

2.13 Developers of training programmes will have to tailor their programmes to the particular situation and

target audience. The first step in the development of any programme must be to determine what issues should be addressed. Programmes in countries where alcohol presents the only potential substance use problem could be limited to that topic, whereas in other circumstances a variety of substances may present a hazard potential. Different approaches may also be appropriate, depending on whether legal but potentially dangerous substance use or illegal use is primarily at issue. Programme development will also depend on the level at which programme requirements are being established — requirements established by a civil aviation regulatory authority will be broadly prescriptive, whereas a company programme could be very specific. Cultural differences should also be considered. Finally, employees or labour organizations should be invited to assist in the development of any educational programme.

2.14 There can be as many different educational programmes as there are settings in which to present them; however, this document provides examples of training materials that can be adapted for use in many situations. These materials include sample training curricula, employer policy statements, information on alcohol and other drugs, and guidelines on identifying problematic substance use. Programme developers may also be able to obtain useful information from aviation regulatory authorities, medical advisers, national or local law enforcement and health authorities, substance use prevention and treatment specialists, or other experts.

Chapter 3

IDENTIFICATION, TREATMENT AND REHABILITATION

3.1 The use of psychoactive substances by individuals can give rise to significant problems. Not only are there potentially harmful effects from the substance use itself, but use can also lead to physical and psychical dependence. Whether or not this dependence is regarded as a "disease" *per se*, it is clear that the dependence and any attendant psychological or physiological pathology must be treated professionally. Only a trained specialist can determine whether a pathological condition is present, what the condition is, and what treatment is appropriate.

IDENTIFICATION

3.2 One of the most important aspects of problematic substance use prevention is ensuring that those employees who are inappropriately using alcohol or other drugs are identified and limited to positions in which they cannot threaten aviation safety until it is determined that they no longer pose a risk.

3.3 Individuals who engage in problematic substance use can be identified in a number of ways. First, the individual who recognizes having a problem may voluntarily seek assistance. Workplace employee assistance programmes, especially those that provide confidentiality to the employee, are likely to encourage such self-identification. Generally speaking, however, most employees, especially those who have become drug dependent, do not self-identify. Fear of job loss or stigma cause some employee reluctance; denial may also be the cause. An employee who is dependent on alcohol or another drug may deny the fact of the dependence ("I can quit any time") or may deny that it is adversely affecting the workplace.

3.4 Co-workers and supervisors may be in the best position to identify employees who may be engaging in problematic substance use. If dependent, the employee may display both signs of immediate impairment from use and long-term behavioural and performance indicators of a problem. Supervisors who are properly trained and aware of their employees' conduct can confront employees with documented observations of these indicators. Similarly, co-workers may be able to identify problematic substance use.

3.5 Some companies and regulatory agencies have established training programmes for peer identification and intervention. Under these programmes, specific employees are provided information on psychoactive substances, signs and symptoms of use and problematic use, and intervention techniques. These employees do not become diagnosticians or counsellors, but they do develop special skills and knowledge that can be used to assist other employees in recognizing their problems and obtaining help. These trained employees can also be used to provide information on problematic substance use to their colleagues and to assist in the re-entry into the workplace of recovering employees.

3.6 Problematic substance use can also be identified through biochemical testing. Because of the complexity of the issues involved in testing, this document includes a separate section on such programmes.

3.7 Law enforcement agencies are another possible source of information regarding problematic substance use. In some countries, employers or aviation regulatory authorities require reporting of arrests, indictments and convictions for alcohol or other drug-related offenses. Information concerning psychoactive substance use in situations likely to endanger the public (e.g. drunk/drugged driving) can be directly relevant to the performance of duties involving aviation safety. Studies in States in different parts of the world have shown that persons convicted of driving under the influence of alcohol or while intoxicated very often can be diagnosed as alcoholics. This is especially true if the person concerned is more than 25 to 30 years of age.

3.8 Any illegal activity involving psychoactive substances is an indication that the person could pose an unacceptable risk.

3.9 Once identified as engaging in problematic substance use or as possibly having a difficulty with the use of alcohol or another drug, the employee should be evaluated to determine the nature of the condition. In limited circumstances, a trained on-site counsellor may be able to rule out a significant disorder. For such employees, it may be enough to provide targeted education. In most cases, however, a professional evaluation will be required.

3.10 Ideally, the evaluation should be conducted by a specialist in substance use dependence. Other practitioners may focus on the physiological consequences of psychoactive substance use and fail to diagnose the underlying condition. A comprehensive evaluation should include the employee's use history and family history, a psychosocial examination and a complete physical examination.

3.11 Decisions with respect to treatment and rehabilitation are most at issue if an employee is found to be drug dependent, which the *Manual of Civil Aviation* Medicine (Doc 8984, Part III, Chapter 9, Appendix B) defines as:

> A state, psychic and sometimes also physical, resulting from the interaction between a living organism and a drug, characterized by behavioural and other responses that always include a compulsion to take the drug on a continuous or periodic basis in order to experience its psychic effects, and sometimes to avoid the discomfort of its absence. Tolerance may or may not be present. A person may be dependent on more than one drug.

3.12 In some cultures, even dependence is addressed as a legal or social issue, not purely as a health issue. Such cultures may feel, especially if health care resources are scarce, that it is unnecessary or inappropriate to provide treatment or rehabilitation for an individual who has chosen to engage in dangerous and illegal conduct. It must be recognized, however, that virtually all types of drug dependence are progressive and, in the absence of therapeutic intervention, often fatal. Further, as long as dependent persons go untreated, they pose a risk to others. When evaluating whether to provide treatment and rehabilitation, employers and other decision-makers should also consider the investment made in hiring and training employees, especially those in high-skill aviation occupations.

TREATMENT

3.13 Treatment of psychoactive substance use disorders is the modality used in response to specific symptoms and behaviour. It can include pharmacotherapy, psychotherapy, and various social measures, depending on the presenting condition and the clinician's determination of the appropriate course of therapy. Treatment can involve, among other things, the following modalities:

— ***Detoxification.*** This is the management of the patient during the process of eliminating a drug from his system. Medically monitored detoxification, usually on an in-patient basis, is indicated when the patient presents with acute intoxication. The length of the detoxification process will vary, depending on factors such as the types, quantities and combinations of substances taken, the duration and severity of the dependence, age and general physical health. Uncomplicated detoxification will generally last from one to seven days, while detoxification from barbiturates can take two weeks or longer. Further treatment will always be necessary after detoxification.

— ***In-patient treatment.*** The need for in-patient treatment will depend on the severity of the dependence, the prevalence of relapse for users of the substance involved, the presence of medical complications, the availability of support (family, employer, etc.), and other factors. The degree to which denial is involved in the disease is also important. An individual who denies having a substance use problem, especially after detoxification has been required, is unlikely to continue to obtain assistance once released from care. Similarly, if the patient's family or employer refuse to recognize that a problem exists, the patient will not receive the ongoing support that is necessary to ensure recovery.

— ***Out-patient treatment.*** Once an individual is stabilized and abstinent, treatment must continue on an out-patient basis. Alternatively, out-patient treatment alone may be appropriate for employees who do not meet the diagnostic criteria for dependence but who may need some type of therapeutic intervention because their use of a psychoactive substance is sufficiently recurrent and inappropriate.

3.14 Within the previously described modalities, two major types of therapy are usually available for dependents:

— ***Pharmacotherapy.*** Pharmacotherapy is primarily indicated for relief of the more serious symptoms of withdrawal. Benzodiazepines may be helpful in managing alcohol withdrawal, for example, and

persons dependent on barbiturates generally need controlled administration of the drug on a strict schedule in order to safely withdraw. The use of drugs in the treatment of dependence must be managed with extreme caution though, especially since many of the most useful drugs have themselves the potential for creating dependence. Although pharmacotherapy for dependence, e.g. methadone maintenance or disulfiram, may be an appropriate type of therapeutic intervention, employees undergoing such treatment should not perform safety-sensitive duties.

In the past, longer-term pharmacotherapy for alcohol dependence has included use of disulfiram (Antabuse®). This medication causes profound physical discomfort if alcohol is consumed after the drug is taken. However, the evidence is equivocal regarding the success of disulfiram in treating alcohol dependence and evidence is increasing that use of the drug may cause or contribute to cardiopathy, seizure disorders and mental dysfunction. In many countries the use of disulfiram is now being minimized or rejected.

Management of dependence on narcotics can also include use of methadone. Methadone can be used to relieve the symptoms of opiate withdrawal and is also used as a long-term substitute for heroin or other opiates. The intent of "methadone maintenance" programmes is to enable a dependent person to function in society, something that the continued use of heroin usually makes impossible. For some people and in some cultures, methadone maintenance programmes have been helpful; however, such programmes may give rise to other serious problems.

— ***Psychotherapy.*** To be successful, the treatment of drug-dependent patients must involve the use of some form of psychotherapy. In this context, psychotherapy is understood in the broadest sense, from rearranging the patient's daily life in a therapeutic community to the classic group and individual therapy. The following types are especially relevant:

Therapeutic community, which requires patients in an in-patient setting to participate in individual, group or occupational therapy during all waking hours, has had some success, especially in overcoming denial.

Individual and *group counselling*, usually part of the concept of therapeutic communities, may also be offered separately on an out-patient basis. Counselling is a less directive type of psychotherapy and is indicated for patients who accept their disease but need further help to stabilize a substance-free life. Counsellors have to be selected carefully, as in many countries their education is not regulated officially and is therefore often inadequate.

Behaviour therapy plays an important role in the treatment of dependence and can be carried out in different settings (in- and out-patient, individual and group therapy). An individual treatment plan for each patient is favoured; treatment includes cognitive (e.g. accepting an abstinent life), verbal (e.g. saying "no" to offers of drugs or alcohol) and behavioural (e.g. avoiding critical places such as bars, building up new leisure-time activities) aspects.

Psychotherapy may focus on the use of motivational interviewing, in which patients are required to inventory the problems associated with their use of psychoactive substances.

— ***Psychoanalysis*** has been generally unsuccessful in treating dependence.

REHABILITATION

3.15 The goal of rehabilitation is to establish and maintain a new substance-free life in a normal social environment, along with optimal health, mental functioning and social well-being. Treatment and rehabilitation often overlap in a way that makes differences difficult to realize for non-specialists, and sometimes the term "rehabilitation" is used about all therapeutic activities following detoxification. Some of the most important elements of rehabilitation are:

— ***Aftercare and long-term follow-up.*** Treatment, even intensive in-patient care, is unlikely to result in recovery unless it is followed by ongoing assistance. In the workplace, this must include monitoring, preferably by an employee assistance professional or designated peer. Periodic re-evaluation by a substance dependence specialist is critical.

— ***Self-help/support groups.*** Involvement in a group such as Alcoholics Anonymous (AA) or Narcotics

Anonymous (NA) can provide dependent individuals with a continuing source of support during the rehabilitation process. Many people around the world have found these groups invaluable in ensuring recovery or overcoming relapse. However, a caution should be noted regarding these groups: as apparent from the "Twelve Steps" included in Attachment C, such programmes have a significant spiritual component which some people may find offensive.

— ***Vocational rehabilitation.*** Returning to work after undergoing treatment for dependence can be one of the most critical stages in an employee's recovery. Policy and procedures for re-entry are addressed in the last section of this document.

Chapter 4

EMPLOYMENT CONSEQUENCES OF PROBLEMATIC USE OF SUBSTANCES

4.1 An important issue to be addressed in the establishment of any programme to prevent problematic use of substances is the sociomedical disposition of individuals who engage in such use. The employment consequences of any violation will be constrained by applicable labour relations law, labour-management agreements, disability laws and economic considerations. Depending on those constraints, the available options include any or all of the following:

— immediate termination of employment
— temporary removal pending evaluation
— disciplinary action
— treatment and rehabilitation
— conditional or unrestricted return to duty.

4.2 ICAO Standards provide that an individual with a medical history or clinical diagnosis of alcoholism and/or drug dependence is not medically qualified to hold a flight crew or air traffic control license. However, provision is made for issuance of a license to a person who would otherwise be disqualified upon a finding that safety would not be compromised if the person exercised the privileges of the license. The evaluation of a person requiring a medical assessment and the subsequent determination that the person can safely perform his or her duties will generally be made by or in conjunction with the country's licensing authorities. The aviation regulatory authority's involvement may vary from carrying out the whole assessment to the pure issuance of licenses, with all necessary evaluation being carried out by accredited experts outside the regulatory authority.

4.3 Assuming that certain options are not required or prevented by law, the approach to the disposition of employees identified as engaged in problematic substance use depends in large part upon the decision maker's views of the conduct.

4.4 An employer that sees problematic use of substances purely in terms of misconduct (i.e. the employee violated company rules or even committed a crime) is likely to simply terminate employment of the offending employee. On the other hand, an employer who perceives any instance of problematic substance use as a sign of dependence will be looking for treatment and rehabilitation measures. The middle view will often prevail, whereby each case is assessed to determine whether the conduct was voluntary (i.e. wilful misconduct) or caused by a serious problem calling for treatment.

4.5 Financial considerations may also affect the employer's decision. High training costs in many areas of aviation support the acceptance of treatment and rehabilitation, as these costs would have to be incurred again to replace the employee. Furthermore, a considerable amount of experience would often be lost to the company by choosing simple termination of employment over treatment and rehabilitation.

4.6 Regardless of the ultimate choice of actions, it is essential that employees identified as having engaged in problematic substance use be limited to positions not related to aviation safety until it has been determined that their continued performance will not jeopardize safety. The assessment may be as simple as an interview or as complex as a comprehensive evaluation by a medical professional and a substance abuse specialist. The appropriate actions depend on the availability of facilities for education, treatment and rehabilitation under the provisions of the relevant laws and regulations. It must be noted that there is an increasing trend to implement such education and rehabilitation programmes, in view of the low number of individuals affected within the aviation community and the immense costs to replace such personnel.

4.7 The decision to return an employee to the workplace following problematic substance use must include an assessment of the individual concerned and an assessment of the workplace.

4.8 An employee, while being treated for a substance use problem, must be abstinent. Before being returned to the workplace, the employee must have been

in a stable condition for a reasonable period of time and must be considered fit and safe by an appropriate health care professional. To guard against relapse, it is essential that the employee be subjected to a long-term monitoring programme.[1] This should include out-patient treatment, counselling, and peer or self-help group support, and may include biochemical testing, especially for substances with a high relapse rate.

4.9 The employer should ensure that the workplace is amenable to the returning employee. If problems in the workplace, such as high levels of stress, contributed to the employee's problem, the solution may be to place the employee in another position or to take steps to reduce the stressors. Similarly, the employee should not be returned to a work group where social pressures could undermine the rehabilitation process. Implementing an education programme for all employees and establishing peer groups within the company can help minimize temptations and pressures for the individuals having problems.

4.10 The conflict between problematic use of substances and aviation safety demands that no employee should be permitted to return to an aviation workplace without accepting the fact that such substance use is dangerous and unacceptable.

1. Sample assessment protocols are shown in Attachment D.

Chapter 5

BIOCHEMICAL TESTING PROGRAMMES

5.1 Biochemical testing is a process whereby a sample of breath, blood, urine or other body fluid or tissue is procured from an individual and submitted for biochemical or biophysical laboratory examination and analysis, and where the result of this testing is cited as proof of a particular conduct. Whether or not to institute biochemical testing of employees can be one of the most difficult decisions to make in establishing problematic substance use prevention programmes. Such testing involves living individuals, as opposed to the post-mortem toxicology testing generally required as part of an accident investigation.

5.2 Many individuals strongly support testing programmes; many others strictly oppose them. Any decisions about instituting such a programme should be based only on a careful analysis of the relevant situation. This analysis must include ethical, legal, practical and cost-effectiveness aspects, as well as the goals to be reached. Additionally, the analysis should assess the availability of alternatives that might fulfil the selected goals with less cost or controversy. All of these aspects are closely linked and must be evaluated together. The first part of this chapter will address these topics.

5.3 If the decision is made to implement a testing programme, a written policy is needed, describing the goals of the programme, details about the required testing including the types of tests, methodology, procedures, assessment of positive or negative results, the possible consequences for the individual employee and quality control measures. Each of these aspects is addressed in the second part of the chapter.

THE DECISION-MAKING PROCESS

5.4 The decision to establish a testing programme should be based on the considerations described in the following paragraphs.

Size of the problem

5.5 Determinations must be made of whether a present or potential problem exists in the relevant workplace and, if so, what the nature and magnitude of the problem are. There is no point in establishing a programme to identify problematic use of substances if there is no threat of such conduct occurring. However, this does not mean that there must be evidence of a significant problem with alcohol or other drug use in the workplace for a testing programme to be useful. High prevalence in the general population may also warrant institution of a programme as a preventive measure (e.g. a limited programme requiring pre-employment testing of applicants for safety-sensitive positions.) The decision-makers should use the objective hazard potential assessment presented in Attachment A of this manual to assist them in determining the nature and scope of any problem.

Legal aspects

5.6 If the problematic use of substances does pose a hazard, then the next question must be whether testing would be a useful tool in addressing the problem. For regulators, resolution of this question must include a consideration of whether current law would support testing and, if not, whether new legislation would be feasible or desirable. Similarly, employers must determine whether applicable law or labour-management agreements would be an obstacle to the implementation of a testing programme. Because all forms of testing intrude to some extent on the personal privacy or bodily integrity of affected employees, laws relating to these issues are particularly of concern, as are the following considerations.

The workplace climate

5.7 All types of testing raise the possibility of controversy in the workplace. Random testing might be

seen as the least offensive type of test because it is not based on suspicion about the behaviour of a single person. It might also be seen, however, to reflect management's mistrust of the staff (this is especially relevant if the prevalence of problematic substance use is low). Over time, workplace morale could be undermined. Both management and staff may believe that their active participation in the prevention of problematic substance use is unnecessary, thus encouraging a "conspiracy of silence" in affected employees. This outcome is more likely to occur if termination of employment is the only or major consequence of a positive test result. Therefore, although random testing can have usefulness in the appropriate setting (as will be discussed below), in low prevalence populations especially, alternative methods of early detection might be more acceptable, effective and less expensive.

5.8 Efforts should be made to ensure co-ordination with employees in the industry or company. If a decision is made to continue with development of a testing programme, the practical issues associated with testing (selection of employees subject to testing, the substances for which to test, the testing methodology, etc.) must be resolved. Once the final programme has been developed, it is critical that the information be conveyed to affected individuals **before** the start of testing.

Purpose of testing

5.9 The implementation of a testing programme may well be supported by existing laws and regulations, but further consideration is still needed about the usefulness of testing. Decision-makers must determine whether detection of use or deterrence of use is the primary objective of testing, what consequences a "positive" test result could have, and what the possible benefits and adverse effects might be if a programme were to be implemented. (For example, deterrence, to the extent it occurs, will only occur within the group of occasional substance users – not dependents. The magnitude of both deterrence and detection can be increased by increasing the rate of testing, which also increases costs.)

5.10 Many of the key decisions to be made in developing a programme depend on the purpose for which the testing will be conducted. There are many purposes for testing, any or all of which can form the basis for a programme.

5.11 The primary purpose is to identify employees who need assistance or treatment for alcohol or other drug abuse or dependence. An objective, scientifically based test result can be the critical element not only in disclosing to the employer that the employee has a problem, but also in confronting the employee. If the only consequence of a positive test is referral for diagnosis and assistance, then the programme does not have to be as technologically complex as a programme established for legal or other purposes. For example, devices that only provide qualitative indicators of the presence of the psychoactive substance could be used, rather than advanced laboratory testing.

5.12 All other purposes for testing necessitate ***forensic*** testing as opposed to clinical testing, because it is presumed that results will be attributed to an individual, and adverse consequences may follow a test result indicating that prohibited conduct has occurred. In the development of biochemical testing programmes generally, programmes meeting forensic requirements are those that have produced test results that are supportable if challenged in court or another legal forum. Forensic testing is characterized by strict procedures to ensure that the specimen tested came from the specified person (the "donor"), that it was not tampered with or adulterated by the donor or any other person, that the results are accurate and that all records are maintained in a secure and confidential manner.

5.13 The steps necessary to meet forensic testng requirements include ***chain of custody,*** which ensures that all specimens are sealed upon receipt from the donor to prevent undetected tampering and that specimens are handled by the minimum number of persons. It is also essential that any transfer in possession, whether to another person or a laboratory or to temporary storage, be documented on a chain of custody document. This document should be a complete and accurate reflection of the history of the specimen. Additionally, to ensure the accuracy and reliability of analytical procedures, devices used in testing must be properly calibrated, maintained and operated. Complete records documenting the history of any analytical device must also be kept. Finally, it is vital that appropriate procedures be instituted by an organization with technical expertise to ensure the accuracy and reliability of any analytical devices and protocols. Laboratories that will perform workplace testing should be required to undergo certification by a national agency or appropriate professional organization. These are only a few of the requirements for an acceptable forensic programme.

5.14 Forensic procedures must be used in any situation in which adverse consequences could result from evidence of substance use, and in post-accident testing when causation is an issue, especially if the persons being tested are living.

Whom to test

5.15 Although the aviation environment is one that mandates safety at all times, it is possible that not all aviation employees can or should be subjected to biochemical testing. As with anything else, of course, the decision on the appropriate scope of the programme will depend on the situation for which the decision is being made. An employer that has a "one population, one policy" rule would apply a testing programme either to none of its employees or to all of them. Alternatively, some regulatory authorities or employers may choose to adopt a programme that applies only to those employees performing functions deemed to be sufficiently safety-sensitive to warrant the intrusion on privacy that testing unavoidably brings. The categories selected should include: flight crew members (pilots, flight engineers and flight navigators); flight attendants; maintenance personnel (including repair and inspection personnel); flight instructors; dispatchers; passenger and baggage screeners; ground security co-ordinators; and air traffic controllers. Other categories of personnel, among them airport security and firefighters, could also be considered for inclusion.

Types of tests

5.16 Once decisions have been made on the institution of a testing programme and on whom to test, the types of tests to be conducted must be determined. The hazard potential assessment should have revealed the psychoactive substances that could pose a danger to aviation safety, and it is for evidence of use of these substances that tests would be conducted.

5.17 One of the most critical things to remember is that a test for psychoactive substances other than alcohol *does not provide evidence of current impairment.* Unlike alcohol testing, where a certain blood alcohol level is a significant indicator of impairment, a particular concentration of other psychoactive substances or their metabolites in a person's body cannot be easily correlated to a particular degree of impairment. Although one can presume recency of use if the substance is present in an employee's blood, whether and how much it is affecting the individual cannot be determined even from a blood test. Further, substances can be detected in hair and urine for days or weeks after the use occurred (the detection time varies with the type of drug and frequency of use, among other factors). If testing for drugs other than alcohol is being considered, therefore, it must be recognized that such testing could reveal evidence of conduct that may or may not have affected the workplace.

When to test

Pre-employment/pre-transfer testing

5.18 This type of testing is designed to identify applicants for employment or for transfer to a safety-sensitive position who engage in use of psychoactive substances. The consequences of a test indicating the presence of such a substance at or above the designated cut-off levels could include refusal of employment or transfer or an offer of employment or transfer conditioned on an agreement to submit to monitoring (follow-up) testing.

Note.— In general, unless a zero-tolerance standard is applied, pre-employment alcohol testing provides little additional information to help an employer judge an applicant objectively.

Post-accident testing

5.19 Tests of this type should generally be performed on employees whose conduct could have contributed to the accident. The definition of the triggering event may vary — some employers or regulators may limit this testing only to serious occurrences involving the operation of an aircraft, while others may include situations resulting in serious workplace injuries or significant damage to property.

Reasonable suspicion (or "reasonable cause" or "for cause") *testing*

5.20 This testing is based on indicators that an employee is currently impaired by alcohol or other drugs. Many labour groups do not object to reasonable suspicion testing provided that there is a proper basis for the suspicion. In practice, however, many supervisors hesitate to identify an individual for suspicion-based testing for fear that the employee would claim to have been defamed by the suspicion. The key to effective inclusion of reasonable suspicion testing in any programme rests in ensuring that the bases for testing are fully defined and that responsible supervisors are adequately trained.

Periodic testing

5.21 This type of testing is conducted on a regular, announced basis (for example, during an annual physical examination). It is designed to deter individuals from

using alcohol or other drugs, but has the primary effect of identifying those individuals too dependent to abstain from use proximate to the time of the test.

Return to duty/Follow-up

5.22 These tests are necessary when an individual returns to work following an instance of problematic substance use. Such an individual should be required to demonstrate being abstinent in order to return to work, and should demonstrate continued abstinence through frequent or unannounced follow-up testing.

Voluntary testing

5.23 In addition to required testing, employers or regulatory agencies may permit voluntary submission to testing. Volunteers can include individuals seeking assistance for a substance use problem, or management officials not otherwise subject to testing who submit to demonstrate their faith in the programme.

Random testing

5.24 No type of testing is more controversial than random testing, and in some States it is prohibited by law or public policy. The theory of random testing is one of deterrence: individuals who are subject to random, unannounced searches for evidence of prohibited conduct will choose not to engage in such conduct if they perceive a likelihood of the use being detected and that adverse consequences will apply if detection occurs. It is a fairly simple theory and the same theory as the one underlying unannounced audits in banks and roadside sobriety checkpoints. In the only State with industry-wide biochemical testing programmes, random testing was instituted as an almost purely preventive measure — to keep the rising tide of illegal drug use in that State from overflowing into an historically safe industry.

5.25 Random testing does not presume that any particular individual has engaged in or will engage in problematic substance use, but it does presume that the threat of such use exists in the relevant environment. There is no point in instituting a deterrence programme for conduct that would not threaten aviation safety. One question that must be considered is what risk is a decision-maker willing to accept. Opinions range from those who assert that random, suspicionless testing should never be allowed no matter what the circumstances, to those who believe that evidence of alcohol or other drug abuse in the industry as a whole would warrant random testing, and to those who believe that the possibility of even one occurrence of problematic substance use in aviation justifies imposition of a programme on all ("one is one too many if it's my pilot").

5.26 A variant on strict random testing combines random testing with reasonable suspicion. In this type of testing, employees are randomly selected and interviewed by a supervisor. Biochemical testing is required only if the employee's behaviour, performance, physical appearance or other attribute indicates that the individual may be currently impaired by a psychoactive substance. As with any type of random testing programme, however, employees must be fully advised of the details of the programme and know that there is no possibility of harassment or manipulation of selections.

5.27 Special consideration should be given to random testing for alcohol. Such testing has most utility in populations with a high prevalence of alcohol problems; it may be somewhat less useful than random testing for other psychoactive substances, for two reasons. First, alcohol is processed out of an individual's body fairly rapidly, so unless the employee has an extremely high blood alcohol concentration (BAC) upon arrival at work or continues to drink after arriving at work, there is only narrow time window during which the BAC would be detectable. Once an employee escapes detection, the deterrence value of a random programme is diminished for that person and anyone who knows of the escape. Secondly, in the normal progression of drug dependence of the alcohol type, the workplace is generally the last part of the employee's life to be affected by alcohol use. Therefore, by the time the employee's use of alcohol is likely to be detected on a random test, the employee has probably become too dependent to be deterred by the existence of a random programme.

Costs

5.28 Decision-makers must also determine what the benefits of imposing a biochemical testing programme would be and what the costs would be. The benefits should be considered in terms of enhanced safety and, secondarily, reduced absenteeism, on-the-job injuries and other indirect benefits. The costs include not only the costs of the programme itself, but any adverse effects on employee morale. These adverse effects can be reduced by ensuring that resources remain for other early

identification methods and for peer and professional support programmes to assist employees identified as having engaged in problematic substance use. Employee acceptance of a random testing programme can be enhanced — and the effects on morale mitigated — by ensuring that the programme uses a scientifically based method of random selection of employees subject to testing, with excuses from testing limited.

IMPLEMENTATION OF A TESTING PROGRAMME

Testing methodology

5.29 The choice of testing methodology must also be carefully considered when instituting a testing programme. In forensic testing, it is essential that a test result accurately reflect the presence or absence of a substance in the employee's body. A "false positive" occurs when the test incorrectly indicates the presence of a substance when there is none and a "false negative" when the test fails to recognize that the substance is present. Neither outcome is desirable, but a perfect test giving only true positive and true negative test results does not exist. Given the stigma associated with any suspicion of substance abuse, the potential for false positive test results must be minimized to the extent possible, keeping in mind that an increase in specificity is always associated with a decline in sensitivity.[1]

5.30 The following discussion of testing methodologies does not include performance testing. Such testing, usually conducted by using a computer programme to elicit responses from the tested employee, is designed to identify whether a person is impaired compared to the same person's normal performance standard. As such, performance tests may be useful in general health and safety programmes. However, these tests do not – and cannot – test for a specific **cause** of impairment. If it can be assumed that different employment consequences will attach to impairment caused by problematic substance use as opposed to other causes, such as illness, then a biochemical analysis and clinical evaluation would be required to differentiate causation any time an employee failed a performance test. Additionally, to date, performance testing systems remain costly to develop because they must be specific for the cognitive and motor skills necessary to perform the particular task. Research also indicates that the development of performance testing in general has not yet reached the point where widespread use in the aviation industry can be recommended.

Alcohol testing methodologies

5.31 Alcohol testing methodologies are classed by forensic acceptability (i.e. evidential or nonevidential) and by the biological matrix used (blood, breath, urine, or saliva).

Nonevidential devices

5.32 Nonevidential devices are by definition devices that are **not** accepted in courts as providing proof that an individual had a certain alcohol level, usually because the devices are insufficiently accurate or do not provide a permanent record of the test result. These devices are widely used in law enforcement to provide probable cause to conduct an evidential test, which could provide information on which to base a criminal or civil sanction.

5.33 The most common nonevidential devices are breath testing devices, which vary from so-called "blow tubes" that contain crystals that change colour in the presence of a certain amount of alcohol in the expired air, to small portable electronic devices that provide a quantified result but do not provide a printout. Recently, a saliva testing device has become available.

5.34 Nonevidential devices can be used to screen for alcohol and could be useful in a variety of situations, especially in remote locations where the burden of obtaining or maintaining an evidential breath testing (EBT) device with a trained technician would be significant and the likelihood of needing the device low. Use of such devices would also increase the possibility that testing could be conducted at a worksite, with only employees who screen positive required to either go to an alcohol testing site where an EBT is available or submit to a blood test.

5.35 The devices vary significantly in their cost and accuracy. The possibility of both false negatives and false positives exists to some extent. Since nonevidential devices by their nature do not provide a permanent record of the test result, a separate form would have to be completed by the collector to document any negative test. If nonevidential devices are used for initial testing, arrangements would have to be made to ensure that

1. Any analytical device or test is characterized by its specificity and sensitivity. Specificity is defined as ratio of true negative test results to all tests from persons not using substances and sensitivity is defined as ratio of true positive test results to all tests from persons using substances. A positive test means a result above the threshold of sensitivity, a negative test a result below it.

confirmatory testing by an evidential method could be conducted within a short period of time. During any delay between the initial test and the confirmatory test, the individual will continue metabolizing alcohol, which may affect the test result. The effect of any delay becomes more significant the closer the initial test result is to the cut-off level, and the lower the cut-off level.

Evidential testing methodologies

Urine alcohol testing

5.36 Urine can be tested for alcohol by immunoassay screening and gas chromatography confirmation. Urine testing should not be used, however, because it has several major disadvantages. One disadvantage is that in order to get a quantitation of **current** alcohol content, a double void system would have to be used – that is, the individual urinates, waits 15 minutes or so, then provides the urine specimen actually used for testing purposes. A single void would only accurately measure whether the individual had used alcohol, but would not provide any measurement that could correlate to current alcohol concentration in the person's system. Another disadvantage is the volatility of alcohol in urine. To produce a valid result, the urine must completely fill the specimen container, or the alcohol will escape as a gas into the available airspace. Further, any time the bottle is opened additional alcohol will vaporize and escape. Finally, some data indicate that urine alcohol concentration may not correlate directly to blood alcohol concentration (BAC), and virtually all of the studies on the impairing effects of alcohol have been done using BAC.

Blood alcohol testing

5.37 Blood testing is a well established and very accurate method of confirmatory alcohol testing and many States require or permit motor vehicle drivers who are charged with driving under the influence/while intoxicated to have blood testing conducted. Although alcohol can vaporize out of blood, it is less of a problem than with uring testing — blood is collected in a vacuum tube, a preservative is added, and the tube is tightly capped. The most accurate methods of testing blood are by gas chromatography and enzymatic oxidation. These methodologies are specific for ethanol.

5.38 The drawbacks of using blood include the fact that it involves puncture of the skin, the requirement for a phlebotomist to take the specimen, the fear of needles that some people have, and the fact that blood cannot be frozen for retesting. The technical problems are not insurmountable — persons trained in phlebotomy are generally available at any medical facility, blood specimens may be refrigerated at fairly low temperatures (although there is a limit to the duration of such storage), and the use of now widely accepted biohazard precautions (gloves, disposable needles, etc.) should diminish concerns about the safety of the process.

5.39 Chain of custody would be required. Any laboratory performing blood alcohol testing should also be subject to a quality control programme designed to ensure that the laboratory is technically proficient and that its technicians are able to differentiate between true alcohol consumption and medical conditions affecting the tests.

Saliva testing

5.40 Saliva testing is relatively new and has not been widely used or studied. It would be difficult for most people to provide enough saliva to do any kind of confirmatory test, since such tests take a minimum of 5 mL. Swab tests are inherently questionable, except in very controlled circumstances — the amount of saliva on the swab, the location from which the saliva is taken, the condition of the mouth, and anything present in the mouth can all affect the results. Further, cold remedies and mouthwashes contain more than enough alcohol to produce positive results. Finally, if the collector (especially a non-medical collector) must place the swab in the donor's mouth, the test may be perceived as invasive, while the alternative of permitting the donor to do the collection raises the possibility that the process could be manipulated.

Breath testing

5.41 Breath testing indirectly measures blood alcohol content by measuring the alcohol removed from the blood in the lungs and released in expired air. The devices essentially use a correlation between alveolar air alcohol and blood alcohol. The major concerns about breath testing are the lack of specificity in some devices (i.e. they are not necessarily specific for ethanol), the variation in devices, and the accuracy of the devices at low alcohol concentrations, in high-volume use, in weather extremes, and upon frequent transportation. There are also significant concerns about the costs associated with the devices, including initial purchase, training of operators, and maintenance. Some people, especially medical personnel, may not want to conduct testing that produces an immediate result, whether EBT or nonevidential screening, because of the possibility of confrontation between the collector and the employee.

Psychoactive substances testing
(other than alcohol)

5.42 Like alcohol testing, testing for other psychoactive substances involves a number of highly complex legal, policy, and technological issues. The report of one international conference, "First International Symposium: Current Issues of Drug Abuse Testing",[2] held in Spain, provides an introduction to some of these issues. As noted earlier in this document, and as reiterated in the report, the methodology chosen for testing depends on the purpose for testing and the availability of resources.

5.43 Testing can be performed using hair or any biological fluid. Blood and urine testing are by far the most established and accepted forms of testing. The former is of most use in obtaining evidence of recent use and, in fact, may be the only way of verifying use if an employee is discovered actually using a substance. Because it takes time for the body to metabolize the substances after consumption, a urine sample collected immediately after use of a substance will not contain evidence of that use. (The urine could contain evidence of past use, if any, and testing for such use would be warranted.) Hair analysis is still under development; recent research indicates that problems still exist with environmental exposure and other analytical factors.

Screening tests

5.44 A screening test determines the **presumptive** presence or absence of substances in a person's body. Because they lack specificity or sensitivity, or only provide a qualitative (not quantitative) measure, screening tests are not sufficient for most legal purposes. A number of manufacturers have begun to market on-site screening tests using paper chromatography or simplified immunoassay methods of urinalysis (see below). These tests provide immediate results but can have significant instances of false negative and/or false positive test results, especially if conducted by untrained personnel.

5.45 Most screening tests are conducted using an immunoassay (enzyme, radio-, or fluorescence). Each of these techniques relies on the principle that the appropriate antibodies will recognize drugs in a body fluid and on devices that "read" the responsiveness of the antibodies. All of the immunoassay technologies have been widely used and have proven to be reasonably accurate. The biggest difficulty with the assays is a lack of specificity, allowing only a class of substances to be identified, not one particular substance. Although progress has been made in limiting the cross-reactivity of the assays, all of the available tests can produce false positive test results.

5.46 Thin layer chromatography (TLC), which is a qualitative measure for testing, can be more specific than the immunoassays. TLC takes significantly more urine to produce a result, is less sensitive than the immunoassays, and requires trained technicians to conduct the analysis and review the results.

Confirmation testing

5.47 Any test result indicating that an individual may have used a psychoactive substance should be confirmed by a second analysis. Although any of the methodologies used for screening can also be used for confirmation, it is best to use a second analytical procedure that provides a quantified result. Gas chromatography (GC) is the most commonly used confirmation test. Substances can be identified by determining the times between introduction of the sample into the device and the exiting of the components (the retention times). High pressure liquid chromatography (HPLC) is an analytical process much like GC, with the primary difference being that the sample is introduced in a liquid form.

5.48 The current state-of-the-art in forensic testing combines GC analysis with mass spectrometry (MS). In GC/MS testing the GC device separates the sample into the relevant components. Because substances always separate into known mass spectra, the results of the test sample can be compared with the library of known spectra to identify the substance.

5.49 Confirmatory test methodologies, especially GC/MS, are virtually error-free for positive results when equipment is properly maintained and operated. As with any high-performance scientific equipment, it is expensive.

Review of test results

5.50 In the case of a positive result, management must take immediate action to remove the employee from the workplace. All further actions shall be based on a review of the positive result by a knowledgable medical professional and an examination of the individual circumstances by a substance abuse specialist. A positive test result does not in itself prove impermissible conduct. For example: a positive test result

2. Segura, Jordi, Ph.D., ed., CRC Press, 1990.

for cocaine administered as a topical anaesthetic would not be a "false positive" test result – the analysis correctly revealed the presence of the psychoactive substance. Intervention by medical and substance use professionals could ensure that only employees who should be so identified are determined to have engaged in problematic substance use.

5.51 It should be noted that if indicators of problematic substance use are present, an examination by a substance abuse specialist should occur even if the biochemical test result is negative. If the test result and/or further indicators support the existence of problematic substance use, an employee support programme should be implemented according to the principles in Chapter 3.

Follow-up testing

5.52 Biochemical measurement of abnormal transferrins is today the most specific and sensitive analysis available to detect alcohol use. Transferrin is a glycoprotein. The blood concentration of transferrin with abnormally low content of sialic acid in the carbohydrate structure of the protein — Carbohydrate-Deficient Transferrin (CDT) — increases after consumption of alcohol in even quite moderate amounts. Five units of alcohol daily for a week to 10 days is clearly demonstrable. After two to three weeks of abstinence or very low consumption (i.e. average daily intake of zero to one unit of alcohol) the CDT concentration returns to normal levels.

5.53 The specificity and sensitivity[3] of the CDT test are very high — several studies where alcoholics were compared with teetotallers have shown a specificity over 99 per cent and a sensitivity around 90 per cent. False positive results have been found in around 20 per cent of patients with primary biliary cirrhosis and in some cases of rare hereditary genetic disorders, but generally false positive results are very rare, less than 1 per cent.

5.54 In studies of unselected populations, the CDT test has been found much less efficient in identifying persons with excessive drinking habits, mainly because the test is positive already at normal levels of social drinking. Typical CDT values are: average daily alcohol intake of one unit or less 30-60 mg/L; average daily alcohol intake of one to two units 60-80 mg/L; and excessive drinking (more than five to six units daily), including chronic alcoholism, 100-300 mg/L.

5.55 The CDT test is not affected by intake of alcohol during the 24 hours before the test. Most liver diseases including alcoholic hepatopathy (reduced liver function) do not affect the outcome of the test, nor does use of other psychoactive substances or any medication.

5.56 In recent years the CDT test has proven very useful as a follow-up test in some States' rehabilitation programmes for alcoholic pilots. A CDT test every two to three weeks can with a high degree of certainty demonstrate continued abstinence in a pilot, and abstinence is a prerequisite in rehabilitation programmes where a pilot is allowed back into the cockpit only weeks or months after a period of alcohol abuse followed by detoxification. This test allows a distinction between a patient with an average daily alcohol intake below one unit of alcohol (including zero) over the preceding two to three weeks and a patient with an intake of more than two units daily. In case of relapse, an alcoholic is highly unlikely to be able to abstain from alcohol for two to three weeks before the medical examination, and equally unlikely to be able to keep his alcohol consumption below an average level of one unit of alcohol per day for any length of time. Consequently, a test result below around 60 mg/L is a reliable indicator of continued abstinence and a result above around 80 mg/L an equally strong indicator of relapse.

Quality assurance

5.57 If a testing programme is established it is critical that quality control be exercised throughout the entire process. In forensic testing, quality control must begin with the collection of the specimen to be tested with procedural steps taken to ensure not only that the employee is protected, but also that the process is protected from substance abusing employees who might try to mask their problems. Chain of custody procedures for biological samples should be instituted for the collection of the specimens and for specimen and aliquot handling at the facility that analyzes the specimens.

5.58 Quality control and quality assurance procedures should be developed for all testing, and employers and/or regulators should monitor compliance with these procedures. Employers should consider inspecting any laboratory that might be selected to analyze employees' specimens, and, if appropriate, inviting representatives of labour organizations to attend the inspection. Not only will this provide the employer an opportunity to ensure that the specimens will be properly handled, it will increase employee confidence in the programme.

3. For definitions of specificity and sensitivity, and of false positive results, see Note 1 of this chapter. For the definition of a unit of alcohol, see Note 2 of the Alcohol Information Sheet in Attachment A (page 36).

5.59 A carefully developed programme should focus attention on every aspect of the testing process, from deciding whether, who, and for what to test to ensuring that any test result will be accurate and useful in whatever outcome will follow a result indicating use of a psychoactive substance. The more comprehensive and careful the planning process, the greater the likelihood that the end product will be an accepted and successful biochemical testing programme.

Conclusions

5.60 Prevention of the problematic use of substances is a complex task that can require any number of different tools, depending on the situation. No single set of tools will necessarily be right for any particular workplace. Financial, legal, logistical and other constraints will affect the choices that are made and the programmes that can be instituted. The process must begin with an honest and objective appraisal of the situation. Simply presuming that alcohol or drugs will never affect any aviation workplace is both dangerous and naive.

5.61 It is a reasonable hope that substance use problems will never become as significant in the aviation workplace as they have become in the general population world-wide. It is the responsibility of aviation authorities, employers, and employees alike to take whatever steps necessary to strive for an aviation world free of problematic substance use.

ATTACHMENTS

Except where specifically referenced, these attachments were drawn from a variety of sources or were developed by ICAO.

Attachment A

STRATEGIC PLANNING

ELEMENTS FOR PLANNING AND IMPLEMENTING A PROBLEMATIC SUBSTANCE USE PREVENTION PROGRAMME FOR THE AVIATION INDUSTRY

Element One	Gathering information
Element Two	Formulating objectives
Element Three	Identifying resources
Element Four	Selecting prevention methods
Element Five	Planning for evaluation and feedback
Element Six	Promoting the programme
Element Seven	Implementing the programme

Element One: GATHERING INFORMATION

To develop an appropriate prevention programme, decision-makers need to define the critical issues that are relevant to the workplace. Workplaces that have yet to be directly affected by problematic substance use will necessitate different prevention tools than those in which use of alcohol or other drugs has become an active concern. To more clearly define the critical issues and concerns, introductory questions must be answered by looking at available research and by obtaining information from aviation authorities, employers and employees. The questions include:

- What psychoactive substances are available and used in the general population surrounding the civil aviation workplace? *[Note.— The Hazard Potential Assessment, which follows this section, should be used.]*
- Have any problems or behaviour become evident that give reason for concern?
- How many people are or could be affected by the problem?
- Is a particular work group affected or at risk?
- In what activities are they involved?
- At what level or status within the hierarchy are they?
- Are there any factors that encourage the use of substances in aviation related activities?
- Do attitudes exist that encourage the use of substances (e.g. cultural acceptance, use to enhance performance)?
- What other factors appear to contribute to the problem?

This list is not exhaustive. An analysis of this information will assist in making decisions about what a prevention programme should achieve and whether particular subgroups within the safety-sensitive population should be addressed differently.

Questions for consideration also relate to the type of process that is suitable, for example:

- What types of prevention programmes have proven to be successful in the workplace setting?
- What types of activities have been incorporated into effective prevention programmes?
- What types of prevention programme, if any, are now in place?
- What constraints in choosing programme elements are or might be applicable in terms of laws, regulations, or contracts?

Compiling information about the extent and nature of the problem also provides some baseline data from which judgements about changes in knowledge, attitudes and behaviour can be assessed over time to evaluate the effectiveness of the programme in the short and long term.

There are a number of ways information can be collected. Decision-makers should choose a method that provides the necessary information within the limits of available financial and human resources. Methodologies include:

- Formal surveys (telephone survey, questionnaires)
- Informal discussions
- Observations of workplace behaviour
- Review of literature in conjunction with a local university or college
- Discussions with organizations responsible for delivering education about substances and other safety and health issues
- Review of programmes developed by other agencies, organizations and companies
- Discussions with workplace leaders, selected aviation employees (e.g. check pilots) and assistance providers
- Consultation with counsel

Decision-makers should request affected employers/employees to assist in the collection and analysis of the information. This allows more ideas to be generated and the work to be shared, and helps them feel they have a role to play in getting the programme started.

The information collected must be compiled and organized. It is useful to keep separate files for all the categories of information that have been gathered — use patterns, consequences, what programmes exist, what has been tried, other contacts in the community, etc. This information will prove useful at a later date and will be easier to use if it has been organized from the very beginning of the programme development.

Decision-makers who are establishing a prevention programme must, in addition to analysing the workplace and available resources, choose prevention tools that meet the needs of the affected population. The scope of an educational programme, for example, will depend in part on the current knowledge base of the workforce. Institution of biochemical testing and rehabilitation programmes will also depend on the prevalence of use and the availability of resources, and on possible constraints. Finally, the needs of the aviation employees in the company or State must be assessed, and answers to questions such as the following should be obtained from both managerial and nonsupervisory employees:

- What type of prevention activities work best with aviation employees?
- What do you know about substances?
- What is your source of information on substances?
- What is your attitude towards the use of substances in an aviation workplace context?
- Why do aviation personnel use or refrain from the use of substances?

Element Two: FORMULATING OBJECTIVES

Objectives are statements of the end results to be achieved through a prevention programme. The ultimate objective of problematic substance use prevention programmes in aviation is the protection of aviation safety; however, there are also long-term objectives that could be reached specific to substance use. Additionally, a series of short-term objectives is usually required to achieve long-term objectives. Articulating specific objectives provides direction to many of the activities selected and helps in the evaluation of any prevention programme. Most importantly, they require the programme designer to focus attention on what should be achieved by the programme. This process of defining the aims and objectives of the programme, if conducted thoroughly, increases the likelihood of success. Assistance in developing objectives may be obtained from people who have experience in the design and delivery of drug prevention programmes, such as other aviation authorities and employers, adult educators and community health educators.

Some examples of long-term objectives are:

- Elimination of problematic substance use by safety-sensitive aviation employees
- Increasing employee knowledge about the safety and health consequences of substance use
- Development of attitudes that discourage problematic use of substances.

Short-term objectives describe the new or changed abilities that should occur as a result of the prevention programme. They should be related to the needs of the particular workforce; be appropriate to the abilities of the participants; be related to specific objectives; be achievable within the established timeframe; be simple; and be subject to evaluation. Short-term objectives could be set out using the categories "knowledge", "skills" and "attitude".

Knowledge objectives are what participants should be able to remember or understand as a result of the programme. For example, after being involved in the programme participants will be able to:

— list the physiological side effects of various substances;
— explain the reason for random drug testing;
— describe the penalty for a positive drug test.

Skill objectives are what participants should be able to perform as a result of the programme. For example, after being involved in the programme participants will be able to:

— refuse an offer to use illegal substances or use substances in a way that will or could threaten safety;
— identify safety risks of various substances;
— use established mechanisms to ensure necessary intervention occurs.

Attitude objectives are what participants should believe or feel as a result of the programme. For example, after being involved in the programme participants will:

— have clearly defined values and attitudes with regard to problematic substance use in a range of hypothetical scenarios;
— feel that there are other options than using substances.

Element Three: IDENTIFYING RESOURCES

For any initiative to be effective, sufficient human and financial resources must be dedicated to developing and implementing the programme. Once programme developers have a clear understanding of the needs of the affected aviation employees and have established the explicit short- and long-term objectives, the resources which can be taken into account when finalizing the implementation process need to be identified. An evaluation must be conducted to determine what education programmes, materials, facilities, expertise and funds are available to help develop and implement substance use prevention programmes.

Sources for support of the programme to consider could include the following:

— experts who work with substance users;
— currently existing materials and equipment (from libraries, treatment centres and universities);
— government and community programmes;
— other high risk and safety-conscious industries.

The cost of any prevention tool must also be assessed against the available financial resources in order to maximize the effectiveness of the funds expended.

Element Four: SELECTING PREVENTION METHODS

Education. Prevention methods vary greatly, but any comprehensive prevention programme should include an educational component. Active educational methods include workshops, role-playing, group discussions and lectures.

Treatment and rehabilitation. Whether to offer treatment and rehabilitation services, and if so, to what degree is an issue that is usually largely decided on the basis of availability of resources. The rehabilitation of employees who have a substance use problem can be a significant benefit both in terms of employee morale and replacement and training costs. Decision-makers need to assess this issue carefully in light of the information gathered during the initial development steps.

Biochemical testing. The decisions regarding inclusion of biochemical testing in a prevention programme should include the following questions:

— Are there any legal or contractual constraints on establishing a testing programme?
— Based on the information gathered, does problematic substance use pose a potential or current risk to the workplace?
— Would biochemical testing reduce the risk posed by substance use?
— Would the objective of biochemical testing be detection of use, deterrence of use, or both?
— What consequences would be attached to a positive test?
— How would elements of testing integrity, confidentiality and accuracy be maintained if a programme is developed?
— Would adverse consequences occur if a testing programme is established (morale, liability, etc.)? If so, what steps could be taken to minimize their effect?
— Are there any alternative methods for ensuring detection and deterrence of problematic substance use?

Once the need for and objectives of biochemical testing are fully articulated, decision-makers can determine

whether or not to choose biochemical testing as a prevention tool and can fully develop the elements of the testing programme.

Employee assistance programmes (EAP). A properly developed EAP can provide any or all of a range of valuable prevention tools. Many strategic planning tasks can be accomplished by a competent employee assistance professional, although the costs of using such a resource can be substantial. The choice of any of services should be made based on the employer and employee needs and the availability of resources.

Element Five: PLANNING FOR EVALUATION AND FEEDBACK

Evaluation and feedback are important in the development and maintenance of an effective programme. During planning, they allow for modifications to be made before the programme is widely implemented (a number of revisions may be necessary before the finished product can be decided upon). After implementation, the worth of the programme can be judged by assessing the end results and deciding whether all objectives were met and how they were achieved.

A plan for further evaluation should be established as part of the initial programme design. To improve the quality of the programme, feedback on the programme content, methods and implementation could be sought from employees, supervisors, medical personnel and others involved. Procedures should also be established for determining whether productivity gains, reduction in workplace injuries and other benefits were achieved.

Ideally, baseline information for long-term evaluation should be collected before the programme is implemented and additional information gathered some time after implementation.

Element Six: PROMOTING THE PROGRAMME

To ensure success of any prevention programme, strategic planning must include development of ways to promote the programme to the affected population. In addition to ensuring wide dissemination of written information outlining the programme, decision-makers can involve national and regional aviation organizations and employee groups in promoting the programme. In such promotion it is important that it be clear to the affected employees how the programme will **benefit** them. Aviation personnel need to know that without the use of substances, they will provide safer services, be more efficient, be better able to compete, save money and protect their health, without losing their ability to be sociable or relax. The promotion of the programme should be part of initiatives designed to promote safety in general.

Element Seven: IMPLEMENTING THE PROGRAMME

The final component of strategic planning is the development of the implementation process. In some respects the implementation of any specific programme begins the moment programme developers begin to ask questions about what to do and what are the critical concerns of the community or target group.

In a more formal manner, implementation means the clear organization of the activities within a concrete workplan and timetable. This means that there must be an estimate as to the length of time it will take to understand the elements of the process, as well as an understanding of how the elements flow together. Creating a timeline for the projected completion of a specific programme will offer a clear means of seeing progress, keeping the goals and objectives in focus and allowing for all the elements to be mapped out in relationship to one another.

EMPLOYEE ASSISTANCE PROGRAMME/SERVICE PROVIDERS

A properly developed EAP can include a range of valuable prevention tools. The choice of any of the following services must be made based on the employer and employee needs and the availability of resources.

Programme development

— Needs assessment
— Programme design
— Development of policies and procedures
— Labour integration
— Facilitation of programme initiation

Clinical services (may include family)

— Assessment, counselling and referral services
— 24-hour response
— Rapid scheduling of appointments
— Telephone and in-person follow-up

Training

— Employee education
— Supervisor training
— Refresher courses
— Written guides for employees and supervisors

Consultation

— Programme consultation with key managers
— Advice to supervisors in specific cases

Reports

— Performance evaluations
— Recommendations to management

Fees

— Sliding scale based on utilization
— Per capita
— Per case

EAP promotion

— Health promotion activities
— Workplace posters
— Paycheck inserts

— — — — — — — — — —

HAZARD POTENTIAL ASSESSMENT

Using medical or law enforcement sources, decision-makers should first assess what psychoactive substances are commonly available and used in society. Next, the hazard potential of the substances should be assessed in consultation with medical personnel. These advisers to the decision-makers should determine the acute and chronic effects of the substance on safety-critical functions and behaviour, including: cognitive processes (concentration, judgment, memory); sensitivity to and ability to respond properly to stimuli; motor functions; physiological impairment; and mood/emotional state. In addressing **illegal** alcohol or other drug use, decision-makers should take into account not only the drug effects *per se* but also the psychosocial factors that would lead an individual to use them. Finally, the degree to which the effects of such substances could influence safety-sensitive duties must be assessed. Factors relevant to this determination are:

— *The likelihood of dependence occurring.* Substances with high potential for dependence are more likely to pose a threat to aviation safety. Once a user becomes dependent on a substance, the urge to repeat its pleasurable effects or to avoid the intensely unpleasant feelings of withdrawal may affect the user's ability to limit the use to times that would not affect the safe performance of his duties.

— *The perceived usefulness of the substance in mitigating negative aspects of the job.* The evidence linking adverse working conditions to alcohol and drug abuse is becoming stronger. The potential exists for use of marijuana in attempt to relieve boredom or the use of stimulants to maintain alertness. Employees may also abuse alcohol, tranquilizers, or other central nervous system depressants to manage stress and anxiety.

— *The degree to which the substance distorts the perception of its effects.* If the effects of use of a substance include an increase in feelings of confidence and the illusion that mental and physical performance is enhanced, the likelihood increases that individuals will perform safety-sensitive aviation duties while affected by the substance. Persons using cocaine, for example, may feel sharper and more energetic, while persons using alcohol may feel calmer and more able to manage stressful situations.

— *The potential for spontaneous recurrence of the drug's effects.* This is primarily an issue for hallucinogens stored in body tissues. Research indicates that with some of these drugs, there may be a recurrence of the effects of the drugs for up to several months after the initial dose. Because the user cannot control the recurrence, use of such drugs is clearly incompatible with aviation duties.

— *The likelihood and severity of adverse physiological and psychological sequelæ.* Use of psychoactive substances can cause adverse effects that last even after the dose has been metabolized. These effects include, for example, short-term memory impairment (marijuana), cardiovascular impairment (alcohol, cocaine and others), and psychosis (amphetamines, marijuana, hallucinogens). The degree to which such effects are inconsistent with the safe performance of aviation duties must be considered.

There are no absolute rules in determining whether particular substances have a hazard potential significant enough to warrant the institution of prevention efforts. If the available substances have significant effects on safety-critical behaviour and functions, they may be considered to be a potential hazard to aviation even if the likelihood of such drugs affecting the aviation workplace is low. Some States may deem it a threat to aviation safety simply that alcohol or other drugs are present in the population at large. The most important aspect of conducting a hazard potential assessment is the willingness to obtain and review objectively the relevant information, without presuppositions regarding the outcome.

HAZARD POTENTIAL ASSESSMENT

1. Identify available psychoactive substances:

_____ _____

_____ _____

For each substance, complete the following:

2. Is non-therapeutic use of the substance illegal?

YES ☐ NO ☐ SOMETIMES ☐

3. Acute (*) and chronic (+) effects on safety-critical behaviour and functions:

	None	Mild	Moderate	Severe
Cognitive processes				
Stimuli response/sensitivity				
Motor functions				
Physiological impairment				
Mood/Emotions				

4. Potential for adverse effects influencing performance of safety-related duties:

	None	Low	Medium	High
Likelihood of dependence (see table on next page)				
Perceived utility in mitigating negative aspects of job				
Degree of distortion of perception of substance's effects				
Potential for spontaneous recurrence of effects				
Likelihood of adverse sequelæ				
Severity of adverse sequelæ				

5. Determination of hazard potential:

All information should be taken into consideration when determining to what degree substance use poses a potential hazard to aviation safety. Aviation regulatory authorities or employers should determine whether substances with the potential for abuse are available, have effects that are incompatible with the safe performance of aviation duties, or may be used in a manner that could affect such duties. Additionally, if non-therapeutic use of the available substances is illegal, the determination should include consideration of the dangers posed by the psychological factors that might predispose someone to engage in unlawful conduct.

COMMONLY USED SUBSTANCES WITH POTENTIAL FOR DEPENDENCE

Drug	Physical dependence	Psychical dependence	Tolerance
CNS DEPRESSANTS			
Opioids	++++	++++	++++
Synthetic narcotics	++++	++++	++++
Barbiturates	+++	+++	++
Glutethimide	+++	+++	++
Methyprylon	+++	+++	++
Ethchlorvynol	+++	+++	++
Methaqualone	+++	+++	++
Alcohol	+++	+++	++
ANXIOLYTICS			
Diazepam, chlordiazepoxide (long-acting)	+	+++	+
Alprazolam, oxazepam, temazepam (short-acting)	++	+++	+
STIMULANTS			
Amphetamine	?	+++	++++
Methamphetamine	?	+++	++++
Cocaine	0	+++	++
HALLUCINOGENS			
LSD	0	++	++
Mescaline, peyote	0	++	+
Marijuana			
low-dose Δ-9-THC	0	++	0
high-dose Δ-9-THC	0	++	?

LSD = lysergic acid diethylamide
THC = tetrahydrocannabinol

0 = no effect
+ to ++++ = slight to marked effect

Excerpt from "The Merck Manual of Diagnosis and Therapy", Sixteenth Edition, Merck Research Laboratories, Rahway, New Jersey, 1992; page 1550.

EDUCATIONAL MATERIALS

PSYCHOACTIVE SUBSTANCES: AN OVERVIEW OF USE AND EFFECTS

The patterns and consequences of use of psychoactive substances are very different from one individual to another. Variables, including the choice of substance, frequency of use and method of ingestion, will determine not only the immediate effect of the substance, but also whether long-term effects will occur and what they will be.

The first consequences of use of any psychoactive substance — the **primary effects** — are the direct pharmacological and psychological effects caused by introduction of the substance into the body. Opioids, for example, produce euphoria, sedation of anxiety and, at high doses introduced intravenously, sensations comparable to sexual orgasm. Sedatives such as alcohol, benzodiazepines and barbiturates produce a sedation of anxiety and mild euphoria. Use of amphetamines and cocaine can result in marked euphoria and a sense of enhanced physical and mental capacities. Cannabinoids produce feelings of relaxation, while lysergic acid diethylamide (LSD) and phencyclidine (PCP) cause hallucinations and gross distortions of perception.

Like the primary effects of psychoactive substances, the patterns of use vary significantly. Marijuana use can occur on a limited basis because of peer pressure or curiosity, with no subsequent involvement. Alcohol use can range from that of moderate consumption to heavy drinking, and individuals who become dependent on alcohol usually increase their consumption over time. Other substances, such as crystallized cocaine (crack) are rarely, if ever, associated with "casual" use, as any use can quickly develop into dependence. Regardless of the degree of use, however, it is clear that the pharmacological effects of psychoactive substances are such that **any** use is inconsistent with the safe performance of critical aviation functions.

The **secondary effects** of psychoactive substance use are associated with dependence and withdrawal. Dependence can be psychological, physiological, or both, and involves a compulsion to use the substance. Withdrawal effects occur when an individual ceases to use a psychoactive substance. Initially, the individual may focus on the memories of the pleasant feelings caused by substance use. Subsequently, the individual progresses to adverse symptoms such as weakness, anxiety and, possibly, serious physiological symptoms. The combined effects of withdrawal are frequently sufficient to lead to reinitiation of the substance use.

This pattern of use, cessation and relapse is associated with dependence and can devastate an individual's life. The problem can be exacerbated by a development of tolerance to the substance, which requires the individual to use progressively larger doses to achieve the desired primary effects. As this process progresses, the search for and use of psychoactive substances can eventually subsume every other aspect of the individual's life.

Employers must be cognizant of both the primary and secondary effects of psychoactive substances. The highly complex aviation workplace is incompatible with these effects and care must be taken to ensure that use of these substances does not compromise aviation safety.

PSYCHOACTIVE SUBSTANCES: INFORMATION SHEETS

The pages which follow are examples of information on psychoactive substances. They can be used to evaluate various psychoactive substances and be provided to employees and supervisors. The information should be tailored for the particular State involved. Similar information sheets should be produced for substances not included here.

Note.— The signs and symptoms described in these information sheets are primarily associated with acute use or dependence, and will only rarely be seen in the aviation workplace; they are included to educate persons who may be evaluating the behaviour of employees, and to inform employees about the physiological consequences and other risks associated with the use of these substances.

ALCOHOL INFORMATION SHEET

Alcohol has been consumed throughout the world for many centuries. In most countries it is a socially accepted drug which, when consumed in moderation for enjoyment and relaxation during social gatherings, is considered little more than a recreational beverage. However, when consumed primarily for its physical and mood-altering effects, it is a substance of abuse. As a depressant, it slows down physical responses and progressively impairs mental functions. Alcohol is forbidden in some countries on religious grounds.

Signs and symptoms of heavy use (acute)

- Dulled mental processes
- Lack of co-ordination
- Odour of alcoholic beverage on breath
- Constricted pupils (occasional)
- Sleepy or stuporous condition
- Slowed reaction rate
- Slurred speech

Note: Except for the odour, these are general signs and symptoms of any depressant substance.

Health effects

The chronic consumption of alcohol over time may result in the following health hazards:

- Dependence (up to 10 percent of all people who drink alcohol become physically and/or mentally dependent on alcohol and can be termed "alcoholic")
- Impaired psychosexual function (e.g. impotence, delayed ejaculation)
- Liver diseases (e.g. fatty liver, cirrhosis)
- Cancers of the mouth, tongue, pharynx and oesophagus
- Pancreatitis
- Spontaneous abortion, birth defects and increased neonatal mortality
- Ulcers

Workplace issues

After intake of a drink, absorption follows quickly, especially if the stomach contains no food. The blood alcohol concentration rapidly reaches a peak level, determined by several factors, but soon begins a slow fall lasting many hours. The blood alcohol level decreases at an average rate of 0.15g/L/hour.[1]

- It takes about 1¼ hours for the average healthy male person (70 kg) to metabolize a drink (one unit of alcohol[2]), whereas the average healthy female person (55 kg) will need almost 2 hours.
- Impairment in co-ordination and judgement can be objectively measured in an individual who has consumed as little as two drinks.
- A person who is intoxicated is much more likely to have an accident than a sober person.

Social issues

- Homicides and other violent offenses are often committed by people who have been drinking prior to the crime.
- Driving after consumption of alcohol entails increased risk of accidents.
- Family difficulties can be caused or exacerbated by alcohol abuse or dependence. Marital tension is inevitable; the divorce rate is high.
- Both household and general aviation accident rates are increased by alcohol use and alcohol dependence. Suicide rates among alcoholics are far higher than among non-alcoholics of the same age.

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1. Blood alcohol concentration (BAC) is usually expressed in g/L, g/dL, mg%, ‰ or per mille, per cent or %, mg/100 mL, mg/dL, or mmol/L. It may even sometimes be seen as a unitless number. The units commonly used correspond to each other the following way: 1 g/L = 0.1g/dL = 100 mg/dL = 100 mg/100 mL = 0.1 per cent or 0.1 % = 1 per mille or 1 ‰ = 21.7 mmol/L.
2. One unit of alcohol is 1.5 cl of pure alcohol (ethyl alcohol, ethanol) which is equivalent to one standard serving of beer, wine or spirits. If not accompanied by food, one unit of alcohol will entail a BAC of c. 0.2g/L in a man (70 kg) and of c. 0.3g/L in a woman (55 kg).

AMPHETAMINE INFORMATION SHEET

Amphetamines are central nervous system stimulants that speed up the mind and body. The physical sense of energy and suppression of fatigue at lower doses and the mental exhilaration at higher doses are the reasons for their abuse. Although widely prescribed at one time for weight reduction and mood elevation, the legal use of amphetamines is now limited to a very narrow range of neuromedical conditions. Although the amphetamines are of unquestionable value in some kinds of military flight operations, their many side-effects and high potential for abuse and strong dependence preclude their use within civil aviation. Most amphetamines that are abused are illegally manufactured in crude laboratories.

Description

- Amphetamine is sold in counterfeit capsules or as white, flat, double-scored "minibennies". It is usually taken by mouth.
- Methamphetamine is often sold as a creamy white and granular powder or in lumps and is packaged in aluminium foil wraps or sealable plastic bags. Methamphetamine may be taken orally, injected, or snorted into the nose.
- Trade/street names include Biphetamine®, Delcobese®, Desotyn®, Detedrine®, Chetrol®, Ritalin®, Speed, Meth, Crank, Crystal, Monster, Black Beauties and Rits.

Signs and symptoms of use (acute)

- Hyperexcitability, restlessness
- Dilated pupils
- Increased heart rate and blood pressure
- Heart palpitations and irregular beats
- Profuse sweating
- Rapid respiration
- Confusion
- Panic
- Talkativeness
- Inability to concentrate
- Heightened aggressive behaviour

Health effects

- Regular use produces strong psychological dependence and increasing tolerance to the drug.
- Withdrawal from the drug may result in severe physical and mental depression.
- High doses may cause toxic psychosis.
- Intoxication may induce a heart attack or stroke due to acute elevation of blood pressure.
- Chronic use may cause heart or brain damage due to severe constriction of capillary blood vessels.
- The euphoric stimulation increases impulsive and risk-taking behaviours, including bizarre and violent acts.

Workplace issues

- Since amphetamines alleviate fatigue, they may be abused to increase alertness in response to overtime demands or lack of adequate rest.
- Low-dose amphetamine use will cause a short-term improvement in mental and physical functioning. With greater use or increasing fatigue, the effect reverses and has an impairing effect.
- Hangover effect is characterized by mental depression and physical fatigue, which may make operation of equipment or vehicles dangerous.

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COCAINE INFORMATION SHEET

Cocaine is used medically as a topical anaesthetic. It is abused as a powerful physical and mental stimulant. The entire central nervous system is energized. Muscles are more tense, the heart beats faster and stronger, and the body burns more energy. The brain experiences an exhilaration caused by a large release of neurohormones associated with mood elevation.

Description

- The source of cocaine is the coca bush, grown almost exclusively in the mountainous regions of northern South America.
- Cocaine Hydrochloride — "snorting coke" — is a white to creamy granular or lumpy powder that is chopped into a fine powder before use. It is snorted into the nose, rubbed on the gums, or injected in veins. The effect is felt within minutes and lasts 40 to 50 minutes per "line" (about 60 to 90 milligrams). Common paraphernalia includes a single-edged razor blade and a small mirror or piece of smooth metal, a half straw or metal tube, and a small screw cap vial or folded paper packet containing the cocaine.
- Cocaine Base — a small crystalline rock about the size of a small pebble. It boils at a low temperature, is not soluble in water, and is up to 90 per cent pure. It is heated in a glass pipe and the vapour is inhaled. The effect is felt within seven seconds. Common paraphernalia includes a "crack pipe" (a small glass smoking device for vaporizing the crack crystal) and a lighter, alcohol lamp, or small butane torch for heating.
- Trade/street names include Coke, Rock, Crack, Free Base, Flake, Snow, Smoke and Blow.

Signs and symptoms of use

Acute

- Wide mood swings
- Runny or irritated nose
- Difficulty in concentration
- Dilated pupils and visual impairment
- Restlessness; talkativeness
- Formication (sensation of ants crawling on skin)
- High blood pressure, heart palpitations and irregular rhythm
- Hallucinations
- Hyperexcitability and overreaction to stimulus
- Insomnia
- Paranoia and hallucinations
- Profuse sweating and dry mouth

Chronic

- Financial problems
- Frequent and extended absences from meetings or work assignment
- Increased physical activity and fatigue
- Isolation and withdrawal from friends and normal activities
- Secretive behaviours, frequent non-business visitors, delivered packages, phone calls
- Unusual defensiveness, anxiety, agitation

Health effects

- Research suggests that regular cocaine use may upset the chemical balance of the brain. As a result, it may speed up the ageing process by causing irreparable damage to critical nerve cells. The onset of nervous system illnesses such as Parkinson's disease could also occur.
- Cocaine use causes the heart to beat faster and harder and rapidly increases blood pressure. In addition, cocaine causes spasms of blood vessels in the brain and heart. Both effects can lead to ruptured vessels causing strokes or heart attacks.

- Strong psychical dependence can occur with one "hit" of crack; usually, dependence occurs within days (crack) or within several months (snorting cocaine).
- Treatment success rates are lower than for other chemical dependencies.
- Cocaine is extremely dangerous when taken with depressant drugs. Death due to overdose is rapid. The fatal effects of an overdose are not usually reversible by medical intervention.
- Cocaine overdose is a common drug emergency and is leading to a rising number of drug-related deaths.

Workplace issues

- Extreme mood and energy swings create instability. Sudden noises can cause a violent reaction.
- Lapses in attention and ignoring warning signals greatly increase the potential for accidents.
- The high cost of cocaine frequently leads to workplace theft or dealing.
- A developing paranoia and withdrawal create unpredictable and sometimes violent behaviour.
- Work performance is characterized by forgetfulness, absenteeism, tardiness and missed assignments.

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CANNABINOIDS (MARIJUANA) INFORMATION SHEET

Marijuana is one of the most underestimated drugs of abuse. It is used for the mildly tranquilizing and mood- and perception-altering effects it produces.

Description

- Usually sold in plastic sandwich bags, leaf marijuana will range in colour from green to light tan. The leaves are usually dry and broken into small pieces. The seeds are oval with one slightly pointed end. Less prevalent, hashish is a compressed, sometimes tar-like substance ranging in colour from pale yellow to black. It is usually sold in small chunks wrapped in aluminium foil. It may also be sold in an oily liquid.
- Marijuana has a distinctly pungent aroma resembling a combination of sweet alfalfa and incense.
- Cigarette papers, roach clip holders and small pipes made of bone, brass, or glass are commonly found. Smoking "bongs" (large bore pipes for inhaling large volumes of smoke) can easily be made from soft drink cans and toilet paper rolls.
- Trade/street names include Marinol, THC, Pot, Grass, Joint, Reefer, Acapulco Gold, Sinsemilla, Thai Sticks, Hash, Ganja and Hash Oil.

Signs and symptoms of use

Acute

- Aggressive urges
- Anxiety
- Confusion
- Fearfulness
- Hallucinations
- Heavy sedation
- Immobility
- Psychical dependence
- Panic
- Paranoid reaction
- Unpleasant distortions in body image

Chronic

- Reddened eyes (often masked by eyedrops)
- Slowed speech
- Distinctive odour on clothing
- Lackadaisical "I don't care" attitude
- Fatigue and lack of motivation
- Irritating cough, sore throat

Health effects

- Marijuana smoke is irritating to the lungs. Chronic smoking causes emphysema-like conditions.
- One joint causes the heart to race and be over-worked. People with heart conditions are at risk.
- Marijuana is commonly contaminated with the fungus *Aspergillus,* which can cause serious respiratory tract and sinus infections.
- Marijuana smoking lowers the body's immune system response, making users more susceptible to infection.

Mental function

Regular use can cause the following effects:

- Delayed decision-making
- Diminished concentration
- Impaired short-term memory, interfering with learning

- Impaired signal detection (ability to detect a brief flash of light), a risk for users who are operating machinery
    - Impaired tracking (the ability to follow a moving object with the eyes) and visual distance measurements
    - Erratic cognitive function
    - Distortions in time estimation
    - Long-term negative effects on mental function known as "acute brain syndrome", which is characterized by disorders in memory, cognitive function, sleep patterns and physical condition.
    - Increased incidence of psychiatric disorders.

Workplace issues

- The active chemical, tetrahydrocannabinol (THC), is stored in body fat and slowly released over time. Marijuana smoking has a long-term effect on performance.
- A five to eight times increase in THC concentration in available marijuana products during the past several years makes smoking three to five "joints" a week today (1995) equivalent to 15 to 40 joints a week in 1978.
- Combining alcohol or other depressant drugs and marijuana can produce a multiplied effect, increasing the impairing effect of **both** the depressant and marijuana.

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OPIATES INFORMATION SHEET

Opiates (also called narcotics[1]) are drugs containing opium. They alleviate pain, depress body functions and reactions and, when taken in large doses, cause a strong euphoric feeling.

Description

- Opium is a natural drug consisting of dried latex extracted from unripe capsules of the opium poppy (*papaver somniferum*), a flowering plant native to Asia Minor and cultivated since ancient times. Opium is now largely replaced by its natural derivates morphine, codeine and heroin.
- Many drugs with similar chemical features and similar narcotic effects have been synthesized: meperidine (Demerol®), oxymorphone (Numorphan®) and oxycodone (Percodan®).
- Opiates may be taken in pill form, smoked or injected, depending upon the type of drug.
- Trade/street names include Smack, Horse, Emma, Big D, Dollies, Juice, Syrup and China White.

Signs and symptoms of use

Acute

- Constricted pupils
- Impaired co-ordination
- Drowsiness
- Stupor
- Impaired respiration (lethal overdose)

Chronic

- Mood changes
- Impaired mental functioning and alertness
- Depression and apathy
- Impaired co-ordination
- Physical fatigue and drowsiness
- Nausea, vomiting and constipation

Health effects

- Intravenous needle users have a high risk of contracting hepatitis and AIDS due to the sharing of needles.
- Narcotics increase pain tolerance. As a result, users could more severely injure themselves or fail to seek medical attention after an accident due to the lack of pain sensitivity.
- Narcotics have a mood altering effect which may mask an existing mental disease and cause the patient not to seek medical or psychiatric help.
- Narcotics' effects are multiplied when used in combination with other depressant drugs and alcohol, causing increased risk for an overdose.

Workplace issues

- Unwanted side effects such as nausea, vomiting, dizziness, mental clouding and drowsiness place the legitimate user as well as the abuser at higher risk of accident.
- Narcotics have a legitimate medical use in alleviating pain; however, workplace use even in prescribed doses may cause impairment of physical and mental functions.

Social issues

- Heroin addiction is widespread, with most addicts using intravenous injection of the drug. Additional medicinal opiate-dependent persons obtain their narcotics through prescriptions.
- Because of tolerance, there is an ever-increasing need for more narcotic to produce the same effect.
- Strong psychical and physical dependence occurs.
- The combination of tolerance and dependence creates an increasing financial burden for the user.

1. In many States the term "narcotics" is used about drugs subject to legal definition as a narcotic regardless of their chemical features, e.g. LSD, marijuana, etc.

PHENCYCLIDINE (PCP) INFORMATION SHEET

Phencyclidine (PCP) was originally developed as an anaesthetic, but the adverse side effects prevented its use except as a large animal tranquilizer. Phencyclidine acts as both a depressant and a hallucinogen, and sometimes as a stimulant. It is abused primarily for its variety of mood-altering effects. Low doses produce sedation and euphoric mood changes. The mood can change rapidly from sedation to excitation and agitation. Larger doses may produce a coma-like condition with muscle rigidity and a blank stare with the eyelids half closed. Sudden noises or physical shocks may cause a "freak out" in which the person displays abnormal strength, extremely violent behaviour and an inability to speak or comprehend communication.

Description

- PCP is sold as a creamy, granular powder and is often packaged in one-inch square aluminium foil or folded paper "packets".
- It may be mixed with marijuana or tobacco and smoked. It is sometimes combined with procaine, a local anaesthetic, and sold as imitation cocaine.
- Trade/street names include Angel Dust, Dust and Hog. When PCP is added to marijuana the product is sold under the name Loveboat or Blunt.

Signs and symptoms of use (acute)

- Impaired co-ordination
- Severe confusion and agitation
- Extreme mood shifts
- Muscle rigidity
- Nystagmus (jerky eye movements)
- Dilated pupils
- Profuse sweating
- Rapid heartbeat
- Dizziness

Health effects

- The potential for accidents and overdose emergencies is high due to the extreme mental effects combined with the anaesthetic effect on the body.
- PCP is potentiated by other depressant drugs, including alcohol, increasing the likelihood of an overdose reaction.
- Misdiagnosing the hallucinations as LSD[1] induced, and then treating with chlorpromazine (Thorazine®), can cause a fatal reaction.
- Use can cause irreversible memory loss, personality changes and thought disorders.
- There are four phases to PCP abuse. The first phase is acute toxicity. It can last up to three days and can include combativeness, catatonia, convulsions and coma. Distortions of size, shape and distance perception are common. The second phase, which does not always follow the first, is a toxic psychosis. Users may experience visual and auditory delusions, paranoia and agitation. The third phase is a drug-induced psychosis that may last a month or longer. The fourth phase is PCP-induced depression. Suicidal tendencies and mental dysfunction can last for months.

Workplace issues

- PCP abuse is less common today (1995) than it has been in recent years. It is also not generally used in a workplace setting because of the severe disorientation that occurs.

1. LSD = lysergic acid diethylamide. A compound which, when taken in minute quantities, produces hallucinations and thought processes outside the normal range. The effect may resemble schizophrenia.

SEDATIVES AND ANXIOLYTICS INFORMATION SHEET

Barbiturates and alcohol are strikingly similar in their syndromes of dependence, withdrawal and chronic intoxication. Small amounts can produce calmness and relaxed muscles, but somewhat larger doses can cause slurred speech, staggering gait and altered perception. Very large doses can cause respiratory depression, coma and death. The combination of barbiturates and alcohol can multiply the effects of the drugs, thereby multiplying the risks. Methaqualone and tranquilizers are also depressants with symptoms much the same as barbiturates. Although tranquilizers are widely prescribed, methaqualone is not commonly available.

Type	What is it called?	What does it look like?	How is it used?
Barbiturates	Downers Barbs Blue Devils Red Devils Yellow Jacket Yellows Nembutal® Seconal® Amytal® Tuinals®	Red, yellow and blue capsules or red and blue capsules	Taken orally
Methaqualone	Quaaludes® Ludes Sopors	Tablets	Taken orally
Tranquilizers	Valium® Librium® Mogadon® Serax® Tranxene® Xanax® Tavor® Halcion® etc.	Tablets Capsules	Taken orally

Characteristics of barbiturate use:

Acute

- Slurred speech
- Poor co-ordination
- Unsteady gait
- Headache
- Confusion
- Excitement
- Delirium
- Respiratory failure (overdose)
- Coma (overdose)

Chronic

- Reduced memory capacity
- Impaired attention and judgement
- Impaired psychosexual function (reduced libido, impotence)
- Mood swings

Health effects

- Dependence
- Extreme insomnia

Withdrawal

- Insomnia, restlessness, mental tension and depression
- An abrupt withdrawal from barbiturates produces a severe, frightening and potentially life-threatening illness essentially similar to *delirium tremens*.
- Withdrawal from barbiturates carries a significant mortality rate and should only be undertaken in hospital.
- Convulsions occur in 75 per cent of those who have been taking 800 mg/day or more. These convulsions may progress to *status epilepticus* and death.

Workplace issues

- Barbiturate use can result in impaired judgement, impaired social and/or occupational functioning.

Social issues

- The use of barbiturates can cause both physical and psychological dependence.
- Regular use over time may result in a tolerance to the drug, leading the user to increase the quantity consumed.
- When regular users suddenly stop taking large doses, withdrawal symptoms may develop, ranging from restlessness, insomnia and anxiety to convulsions and death.
- The suicide risk is elevated in persons who use barbiturates because attempts to discontinue the drug may lead to extreme withdrawal symptoms.
- Babies born to mothers who abuse barbiturates during pregnancy may be physically dependent on the drugs and show withdrawal symptoms shortly after they are born. Birth defects and behavioral problems may also result.

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INHALANT INFORMATION SHEET

A state of intoxication achieved by use of industrial solvents and aerosol sprays continues to be an endemic problem among juveniles. The immediate negative effects of inhalants include nausea, sneezing, coughing, nosebleeds, fatigue, lack of co-ordination and loss of appetite. Solvents and aerosol sprays may also decrease the heart and respiratory rates and impair judgement. Amyl and butyl nitrite cause rapid pulse, headaches and involuntary passing of urine and feces. Long-term use may result in hepatitis or brain damage.

Signs and symptoms of use

- Dizziness
- Drowsiness
- Slurred speech
- Unsteady gait
- Impulsiveness
- Excitement
- Irritability
- Illusions
- Hallucinations
- Delusions
- Delirium
- Psychomotor clumsiness
- Emotional lability
- Impairment of thinking

The intoxicated state may last from minutes to an hour or more.

Type	What is it called?	What does it look like?	How is it used?
Nitrous oxide	Laughing gas Whippets Buzz bomb	Aerosol can (e.g. whipped cream) Small 8-gram metal cylinder sold with a balloon or pipe	Propellant vapours inhaled
Amyl nitrite	Poppers Snappers	Clear yellowish liquid in ampoules	Vapours inhaled
Butyl nitrite	Rush Bolt Locker room Bullet Climax	Packaged in small bottles	Vapours inhaled
Chlorohydrocarbons	Aerosol sprays	Aerosol paint cans Containers of cleaning fluid	Vapours inhaled
Hydrocarbons	Solvents	Cans of aerosol propellants, petrol, glue, paint thinner	Vapours inhaled

Health effects

- Deeply inhaling the vapours of inhalants, or using large amounts over a short time, may result in disorientation, violent behaviour, unconsciousness or death.

- High concentrations of inhalants can cause suffocation by displacing the oxygen in the lungs or by depressing the central nervous system to the point that breathing stops.

- Long-term use can cause weight loss, fatigue, electrolyte imbalance and muscle fatigue.

- Repeated sniffing of concentrated vapours over time can permanently damage the nervous system.

- Complications may result from the effect of the solvent or from other toxic ingredients such as lead in car petrol. Carbon tetrachloride may cause a syndrome of hepatic and renal failure. Injuries to brain, liver, kidney and bone marrow occur and may be the effects of heavy exposure or hypersensitivity. Death most often occurs from respiratory arrest, cardiac arrhythmia, or asphyxia due to occlusion of the airway.

- Partial tolerance to the fumes develops with daily use, as does psychological dependence, but an abstinence syndrome has not been shown to occur.

Workplace issues

- Even occasional users of inhalants are likely to have significant physical and mental problems.

- Treatment of solvent-dependent individuals is difficult and relapse is frequent. Intensive attempts to improve the patient's self-esteem and status in family, workplace and society may be helpful.

- Users of inhalants nearly always use other psychoactive substances as well. When inhalant dependence exists, however, it is usually clear that inhalants are the preferred substance, and inhalants are used regularly whereas other substances are used only sporadically.

- Tolerance to inhalants has been reported, but may be merely increased use over time, with more periods of intoxication and increased preference for higher levels of intoxication. Withdrawal symptoms have also been reported, but there is inadequate evidence to substantiate their existence.

QAT OR KHAT INFORMATION SHEET

Qat is a plant grown in the mountainous areas of Yemen, Northern Kenya and Ethiopia. The leaves of the qat plant (Catha edulis) are chewed for their mild central stimulant action thought to be due to the amphetamine-like constituent cathinone.

Description

Qat is usually supplied in bundles of green twigs and leaves often wrapped in polythene sheeting or in banana leaves to keep the leaves fresh. The soft young green leaves and stalks are chewed. Unless the material is refrigerated, the active compounds will decay within days; the leaves therefore need to be fresh.

Signs and symptoms of use

While chewing, subjects become more alert, talkative and sometimes aggressive. The pupils dilate, heart rate speeds up and blood pressure rises. Males may have difficulty with micturition. Heavy use may interfere with sleep. Some individuals become depressed after use.

Health effects

- Significant blood pressure rise, especially in older individuals, may precipitate myocardial infarction and strokes.
- Long-term and excessive qat chewing is related to a higher incidence of oral cancer. There is some evidence linking long-term use to upper gastrointestinal cancers.
- Occasional cases of serious mental illness may be precipitated by qat use. Qat-induced psychosis has been reported among long-term qat users who increased consumption. These episodes improve with treatment and cease after cessation of qat use.
- Some individuals may become dependent on qat.

Workplace issues

- The euphoria may increase impulsive and risk-taking behaviour.
- Cognitive functions (perceptual-visual-memory and decision speed) are reduced.
- Depression following use may impair work performance.

Attachment B

EDUCATIONAL MATERIALS

POLICY STATEMENT ON PROBLEMATIC SUBSTANCE USE

(SAMPLE)

(Employer) has a strong commitment to ensuring the welfare of aviation workers and protecting the lives and property entrusted to us.

Use of psychoactive substances is a growing threat throughout the world to the health and safety of all people. Use of alcohol or other drugs in the workplace can endanger not only the individual user but also the public.

Problematic substance use must never be permitted to undermine the trust of the flying public in the air transportation system. Each of us shares the responsibility for ensuring the absolute integrity of our system. Each person must ensure that the performance of aviation duties is never compromised and that he or she is fully aware of the dangers that can be posed by the use of alcohol or other drugs.

Employees who engage in problematic substance use not only endanger the public, they also put their jobs in jeopardy. No aviation worker who performs safety-related duties and who engages in problematic substance use will be permitted to perform those duties until (Employer) is satisfied that he or she no longer poses a risk to aviation safety.

POLICY STATEMENT ON PROBLEMATIC SUBSTANCE USE

(SAMPLE)

(Employer) is committed to providing a safe work environment and to ensuring the safety of the travelling public. That commitment is jeopardized when any employee uses alcohol or other drugs on the job, comes to work under the influence, or sells or distributes psychoactive substances in the workplace. Therefore, (Employer) has established the following policy:

1. It is a violation of company policy for any employee to report for work under the influence of alcohol or any other psychoactive substance.

2. It is a violation of company policy for any employee to use, possess, sell or distribute psychoactive substances on the job. Psychoactive substances include such drugs as marijuana, cocaine, amphetamines, barbiturates and heroin.

3. It is a violation of company policy for any employee to drink alcohol during duty time, on company property, or in a company vehicle. It is a violation of company policy for any safety-sensitive employee to come to work within 8 hours of drinking alcohol.

4. It is a violation of company policy for any employee to use any medication that could affect the safe performance of duties unless the company has been informed of and has approved such use.

5. Violations of this policy may result in disciplinary action up to and including termination of employment.

It is the responsibility of each supervisor to counsel any employee whose behaviour or changes in performance suggest that the employee may have a substance use problem. Supervisors should not attempt to diagnose the problem, but should counsel the employee regarding expected performance, encourage the employee to seek assistance, and advise the employee of available resources for help.

Every person in this company shares the responsibility for ensuring that safety is maintained in our workplace and in our industry. We have a duty to each other and to the public to take action whenever problematic substance use is suspected, including encouraging co-workers to seek help.

EMPLOYER POLICY ON PROBLEMATIC SUBSTANCE USE PREVENTION

(SAMPLE)

SUMMARY:

(Employer) is dedicated to maintaining a workplace that is free from the adverse effects of alcohol or other drug use. We have an obligation not only to our customers, but also to each other to ensure that we perform our duties to the best of our abilities. The private decision of any employee to use alcohol or other drugs becomes of great concern to (Employer) when that use occurs in a way that could affect the employee's work performance.

To that end, (Employer) is prohibiting certain conduct by all (Employer) employees. Persons who violate our policy will be subject to consequences required by law, including removal from safety-sensitive functions. In addition, (Employer) has established its own policies with respect to employees who engage in problematic substance use.

EFFECTIVE DATE: _____

A copy of this policy will be distributed to each employee prior to the effective date and to each person subsequently hired by (Employer).

CONTACT PERSON [Name; telephone number]: _____

PROHIBITED CONDUCT:

***Possession and use of alcohol*:**

- Alcoholic beverages shall not be served on company premises or in any company work environment (excluding service to passengers); at any company function occurring during regular business hours; at any meeting conducted for the purpose of internal company affairs; or at any company function attended by children.

- Although beer and wine may be served at company social functions occurring off-premises and after business hours, employees who are planning the function shall make appropriate transportation arrangements for persons who consume alcohol.

- No employee shall consume alcohol during his or her work period or report for work or remain at work while impaired by alcohol.

- Safety-sensitive employees shall not report for work or remain at work within 8 hours of consuming alcohol or with an alcohol concentration (as indicated by a breath alcohol test) of 0.04 or greater.

(cont.)

Possession and use of drugs other than alcohol:

- The possession, use, sale or distribution of any psychoactive substance on company premises or in any company work environment is prohibited; however, possession or use of psychoactive substances for medical purposes is permissible if:

  — the employee notifies a supervisor of the medication;

  — the medication was prescribed for treatment of a current condition by an accredited physician; and

  — the physician has indicated, and the company agrees, that use of the medication is not inconsistent with the employee's duties.

  The possession or use of over-the-counter medications is permissible if:

  — the medication is for a current medical condition; and

  — use of the medication in accordance with the directions is not inconsistent with the safe performance of the employee's duties (safety-sensitive employees must get supervisory approval before performing duties while using any medication containing a psychoactive substance).

[*NOTE:* Some regulatory authorities and employers may wish to expand their policies to include notification of and action based on criminal activities occurring off-duty (e.g. arrests, indictments or convictions for drugged or drunk driving, drug trafficking, etc.). The decision with regard to inclusion of this type of information should include a review of labour-management agreements and applicable law.]

CONSEQUENCES OF VIOLATING THESE RULES:

Safety-sensitive employees will be immediately removed from their duties following a drug- or alcohol-related event.

1. The employment of any employee who uses, possesses, distributes, or sells drugs in violation of this policy will be terminated.

2. The employment of any employee who engages in alcohol misuse will be terminated.

3. Any employee who asks for assistance for a substance use problem prior to being identified as violating our policies **will not have his or her employment terminated** and will be sent to a substance use professional for evaluation at the company's expense.

4. The company may agree to conditionally reinstate an employee whose employment would otherwise be subject to termination if the employee is diagnosed as having a substance use disorder, obtains treatment for the disorder, and agrees to enter into a "last-chance" agreement with the company.

POSTER/HANDOUT

(SAMPLE adapted from United States Department of Health and Human Services)

ALCOHOL AND OTHER DRUG USE IS EVERYBODY'S PROBLEM

- Although our industry has no history of substance use problems, we recognize that problematic substance use is an issue throughout the world.
- There are three good reasons why you should be concerned if any of your co-workers are using drugs or alcohol on the job:
    1. Your health and safety may be at risk.
    2. Problematic substance use costs you money.
    3. Alcohol and drug use create a negative work environment.
- Alcohol and other drug use on the job can have tremendous costs each year. Since most of this cost is passed on to you in the form of higher health insurance rates or in the prices you pay for things, drug and alcohol use on the job costs you and your fellow workers.
- Absenteeism among problem drinkers or alcoholics is many times greater than normal. If your fellow workers don't come to work, you may have to do their jobs in addition to your own.
- Some drug dependent workers steal from their employers or their fellow employees to support their habits.
- Workers who engage in problematic substance use don't function at their full potential. Not only is absenteeism a problem, when they are at work these employees may have reduced capabilities and productivity. *Since our product is the safe transportation of the public, problematic substance use is an especially serious issue.*
- No matter what your position in the organization, there is something you can do to ensure that drug and alcohol use on the job never becomes a problem at this company. If you suspect that someone you work with has a problematic substance use problem, contact (management/EAP/peer representative). Acceptance of any misuse puts you, this company, and the public at risk.

PROBLEMATIC ALCOHOL USE HANDOUT/POSTER

(SAMPLE adapted from United States Department of Health and Human Services)

THE EFFECTS OF PROBLEMATIC ALCOHOL USE ON YOUR HEALTH, WORK AND PERSONAL LIFE

- Alcohol is a central nervous system depressant. Taken in large quantities it not only causes the euphoria associated with "being drunk" but also adversely affects your judgement, your ability to think and your motor functions. Drink enough alcohol fast enough and it can kill you.
- Long term overuse of alcohol can cause liver damage, heart problems, sexual dysfunction and other serious medical problems.
- In some cases, alcohol use can lead to physical and psychical dependence on alcohol. Alcoholism is a serious chronic disease. Left untreated it will inevitably get worse.
- Workers who abuse alcohol affect everyone. Studies show that compared to alcohol-free workers, alcohol abusers are far less productive, miss more work days, are more likely to injure themselves or someone else, and file more workers' compensation claims.
- The measurable financial costs of workplace problematic substance use from absenteeism, overtime pay, tardiness, sick leave, insurance claims and workers' compensation can be substantial. However, the hidden costs resulting from diverted supervisory and managerial time, friction among workers, damage to equipment, and damage to the company's public image mean that workplace problematic substance use can further cut profits and competitiveness.
- Alcohol can also destroy relationships, lead to serious problems with the law (*e.g.*, drunk driving), and even cause harm to the people you love.
- If drinking affects your work life, it could lead to job loss and all of the financial problems that would follow.

PROBLEMATIC ALCOHOL USE AWARENESS HANDOUT/POSTER

(SAMPLE adapted from United States Department of Health and Human Services)

COMMON SIGNS OF PROBLEMATIC ALCOHOL USE

Any one or more of the following signs may indicate a drinking problem for which you should seek assistance:

- Family or social problems caused by drinking.
- Job or financial difficulties related to drinking.
- Loss of a consistent ability to control drinking.
- "Blackouts" or the inability to remember what happened while drinking.
- Distressing physical and/or psychical reactions if you try to stop drinking.
- A need to drink increasing amounts of alcohol to get the desired effect.
- Marked changes in behaviour or personality when drinking.
- Getting drunk frequently.
- Injuring yourself — or someone else — while intoxicated.
- Breaking the law while intoxicated.
- Starting the day with a drink.

"GETTING HELP" — POSTER/HANDOUT

(SAMPLE)

[Developers of educational programmes must work with the specific employer, regulatory authority or government to determine what resources are available for assisting employees in resolving problems associated with problematic substance use. Once these resources have been identified, the information should be conveyed to employees, along with information regarding insurance coverage and cost, if appropriate.]

- If you need help with a substance use problem, our community has a number of resources available. It is vital that you seek medical assistance in determining whether you have become drug dependent, whether you have any medical complications, and what treatment might be appropriate.

- Your family physician may be able to provide you with assistance or refer you to someone who can help. In addition, our community has several good outpatient programmes, any of which can provide you with an initial evaluation and which may be able to provide necessary treatment:

    1. Community Mental Health Center
       Address
       Telephone number
       Contact person

    2. Family Services Agency
       Address
       Telephone number
       Contact person

    3. Hospital Addiction Assistance Department
       Address
       Telephone number
       Contact person

- Inpatient services, designed for those with more serious drug or alcohol problems, are available at the local hospital, the Residential Care Facility, and at the Addiction Clinic. The employee health benefits programme provides coverage for these services.

- Alcoholics Anonymous and Narcotics Anonymous have several local chapters. The referral telephone numbers are:

OBJECTIVE-ORIENTED TRAINING

(EXAMPLES)

[Objective-oriented training can use various methodologies to influence what employees should know, be able to do, or feel about substance use. Once an objective is targeted, the appropriate educational methodology is chosen to achieve the objective.]

KNOWLEDGE OBJECTIVES: List the side effects of alcohol. Describe how to determine if a medication contains a substance that may affect safety and performance.

METHODS: Display a video that outlines the effects of alcohol. Distribute print material on the use of medications and their side effects. Have employees examine the contents of their own medications and check them against a list of side effects.

SKILL OBJECTIVES: Refuse a drink offered by a colleague.

METHODS: Practice dealing with the situation in a role play. In a small group, discuss a strategy to refuse the offer, and then practice what to do in that group.

ATTITUDE OBJECTIVES: Believe that substance use by safety-sensitive aviation employees is dangerous.

METHODS: In a small group, discuss a series of hypothetical situations or incidents.

EMPLOYEE EDUCATION - TRAINING CURRICULUM

(SAMPLE)

I. Effects of problematic substance use on society and the industry

A. Statistics on alcohol and other drug use

B. Potential effects on the aviation industry

1. Safety
2. Personal health
3. Work environment

II. Applicable laws, regulations, company policies

A. Psychoactive substances laws

B. Operation of aircraft while under the influence of alcohol or other drugs.

C. Company policy

III. Effects of specific psychoactive substances

A. Alcohol

B. Cocaine

C. Marijuana

[etc.]

V. Signs and symptoms of possible problematic substance use

A. Alcohol

B. Cocaine

[etc.]

V. Getting help

A. Employee assistance programme

B. Peer intervention programme

VI. Questions and answers

SUPERVISOR EDUCATION - TRAINING CURRICULUM

(SAMPLE)

I. Employee education curriculum

II. Supervisors' responsibilities

- A. Management of employees
- B. Workplace safety
- C. Identification, documentation, and resolution of employee performance problems

III. Management of suspected problematic substance use

- A. Signs and symptoms (observation/documentation)
- B. Removal from duties
- C. Referral for assistance
- D. Confidentiality
- E. Involvement of law enforcement personnel
  - 1. Criminal misconduct (e.g. drug trafficking)
  - 2. Dangerous or combative employee

IV. Conflict resolution skills

V. Re-entry issues

- A. Fitness for duty
- B. Confidentiality
- C. Peer involvement

VI. Questions and answers

Attachment C

IDENTIFICATION, TREATMENT AND REHABILITATION

SUPERVISOR'S CHECKLIST

(SAMPLE)

EMPLOYEE NAME:	DATE:

ABSENTEEISM/TARDINESS:

- ☐ Unauthorized leave
- ☐ Excess use of sick leave
- ☐ Late reporting for work, returning from break
- ☐ Unauthorized departure from worksite
- ☐ Frequent Monday or Friday absenteeism

COMMENTS:

JOB PERFORMANCE:

- ☐ Significant variability in performance
- ☐ Incomplete tasks
- ☐ Operational errors
- ☐ Inability to follow/remember instructions
- ☐ Poor judgment
- ☐ Customer complaints
- ☐ Damage to equipment
- ☐ Complaints from co-workers
- ☐ Other

COMMENTS:

BEHAVIOUR AND APPEARANCE:

- ☐ Inappropriate emotional outbursts
- ☐ Inappropriate temperament (variability, lack of response, etc.)
- ☐ Confusion
- ☐ Inability to concentrate
- ☐ Inappropriate attire
- ☐ Poor hygiene
- ☐ Physical signs of possible problematic substance use (alcoholic odour, red eyes, twitching, dilated pupils, slurred speech, etc.)
- ☐ Other

COMMENTS:

SAFETY PROBLEMS:

- ☐ Failure to comply with safety requirements
- ☐ On-the-job injuries
- ☐ Accidents/incidents
- ☐ Other

COMMENTS:

GUIDELINES FOR ASSESSMENT OF PSYCHOACTIVE SUBSTANCE USE

(SAMPLE adapted from United States Federation Aviation Administration)

SECTION 1 IDENTIFYING INFORMATION	
Name:	
Date of birth:	
Home address:	
Home telephone number:	Work telephone number:
Position:	
Base:	
Safety-sensitive: ☐ YES ☐ NO	
Physical description:	

SECTION 2 PRESENTING PROBLEM
Referral source:
Precipitating circumstances:

(cont.)

SECTION 3 PSYCHOACTIVE SUBSTANCE USE HISTORY					
Substance used	**Y/N**	**Year of first use**	**How used (e.g. IV)**	**Average daily dose**	**Currently using?**
Heroin					
Methadone (non-prescription)					
Other opiates					
Alcohol					
Barbiturates					
Other sedatives					
Amphetamines					
Cocaine					
Marijuana/Hashish					
Hallucinogens (specify)					
Inhalants					
Over-the-counter					
Other(s) (specify)					
Employee's reason for using substance:					
Date of last substance use:					
Substance used:					
Dosage:					
Frequency of use during last year (daily, weekly, sporadic, etc.):					
Use alone or with other people:					
Current cost of substance/day:					
Means of financial support:					
Prior substance use treatment:					
Prior instances of overdose, loss of consciousness, withdrawal:					

(cont.)

SECTION 4 LEGAL HISTORY
Arrests/convictions for drunk or drugged driving:
Other civil or criminal actions related to substance use:

SECTION 5 FAMILY/MARITAL HISTORY		
Are parents living?	Mother (age):	Father (age):
Number of siblings? (sex and ages)		
Family structure (raised by parents, single parent, etc.):		
Age at leaving home:		
Reason for leaving home:		
Family history of psychological problems (including substance use):		
Relationship with parents:		
Socioeconomic/religious background:		
Marital status:		
Age at first marriage:		
Number of marriages:		
Length of most recent marriage and of longest marriage:		
Relationship with spouse:		
Number of children/relationship:		

(cont.)

SECTION 6 **SOCIAL HISTORY**
Number of good friends when growing up:
Current number of good friends:
Percentage of friends that use psychoactive substances:
Relationship with others (introvert/extrovert):
Problem areas in relationships:
Recreational activities, past and present:

SECTION 7 **EDUCATIONAL/VOCATIONAL HISTORY**
Highest educational level:
Effect of substance use on education:
Usual occupation:
Vocational training/history:
Preferred occupation:
Effect of substance use on job performance (sick leave/errors/complaints):
Effect of job on substance use (fatigue/boredom/stress):
Prior disciplinary action based on problematic substance use:
Current job performance (from supervisor):

(cont.)

SECTION 8 MILITARY HISTORY
Branch of service, service dates, discharge date:
Highest rank:
Rank at discharge (if lower, reason for reduction):
Service connected injury, psychiatric disorders:

SECTION 9 INFORMATION ON SUBSTANCE USE FROM OTHER SOURCES (consent required)
Spouse:
Children:
Co-workers:
Others:

SECTION 10 MENTAL STATUS EXAMINATION
Orientation to time, place, and person:
Clearness of thought processes:
Affect:
Mood lability:
Depression:
History of suicidal ideation/attempts:
Emotional outbursts:
Delusional states:

(cont.)

SECTION 11 **RESULTS OF SELF REPORT TESTS**
Michigan Alcohol Screening Test (MAST):
Other test as appropriate:

SECTION 12 **RESULTS OF OTHER EXAMINATIONS (if indicated)**
Physical examination:
Neurological assessment:
Blood chemistries:
Urinalysis:

SECTION 13 **DIAGNOSES**
Substance use disorder:
Complicating medical conditions:

SECTION 14 **TREATMENT RECOMMENDATIONS**
Detoxification required: ☐ Yes ☐ No
In-patient, out-patient, education:
Duration:
Availability of facilities:
Self-help groups:

— — — — — — — — —

EMPLOYEE EDUCATION — TARGETED AWARENESS CURRICULUM FOR NON-DEPENDENT EMPLOYEE

(SAMPLE)

I. **Employee**

- A. Method of identification (self, peer, etc.)
- B. Evidence regarding problematic substance use

II. **Adverse consequences of problematic substance use (general)**

- A. Compromise of public and workplace safety
- B. Health consequences
- C. Job consequences/employer policy

III. **Specific dangers of particular substance**

- A. Psychological and physiological effects
- B. Potential for dependence

IV. **Required actions/consequences**

- A. No further occurrences of problematic substance use
- B. If appropriate, obtain assistance with family, financial, or work problems
- C. Course of disciplinary action that will be followed if problematic substance use recurs

THE TWELVE STEPS OF ALCOHOLICS ANONYMOUS

1. We admitted we were powerless over alcohol — that our lives had become unmanageable.
2. Came to believe that a power greater than ourselves could restore us to sanity.
3. Made a decision to turn our will and our lives over to the care of God as we understood Him.
4. Made a searching and fearless moral inventory of ourselves.
5. Admitted to God, to ourselves, and to another human being the exact nature of our wrongs.
6. Were entirely ready to have God remove all these defects of character.
7. Humbly asked Him to remove our shortcomings.
8. Made a list of all persons we had harmed, and became willing to make amends to them all.
9. Made direct amends to such people wherever possible, except when to do so would injure them or others.
10. Continued to take personal inventory and when we were wrong promptly admitted it.
11. Sought through prayer and meditation to improve our conscious contact with God as we understood Him, praying only for knowledge of His will for us and the power to carry that out.
12. Having had a spiritual awakening as the result of these steps, we tried to carry this message to alcoholics and to practice these principles in all our affairs.

Attachment D

EMPLOYMENT CONSEQUENCES

RECERTIFICATION OF PROFESSIONAL AIRCREW

(SAMPLE adapted from United Kingdom CAA policy, 1994)

- The individual must be grounded after any indication of an alcohol or drug problem.
- The individual must be evaluated by a psychiatrist experienced in dealing with aircrew.
- If the psychiatrist determines the individual not to be a problematic substance user and fit to fly, he/she will so report to the CAA which must, with urgency, review the case and consider recertification.
- If the psychiatrist determines problematic substance use, the crewmember must undergo in-patient treatment of at least 4 weeks.
- After inpatient treatment, the individual's case must be reviewed by the CAA's Medical Division before recertification.
- The individual must be reviewed 4 weeks after discharge by the CAA psychiatrist. The over-all review pattern should be 2, 4, 6, and 12 weeks after discharge. Some review functions may be delegated to an appropriate authorised medical examiner but the CAA psychiatrist **must** see the individual at least twice before recertification is considered at a minimum of 12 weeks after discharge. **Blood tests are required at each review.**
- Follow-up reviews must be conducted every 3 months during the first 3 years following recertification. Blood tests are required at each review.
- Recertification will be limited to "as or with a qualified co-pilot", with a "buddy" on the same fleet reporting on the individual.

RECERTIFICATION AFTER DIAGNOSIS OF ALCOHOLISM

(SAMPLE adapted from Denmark CAA policy adopted in 1992)

The CAA considers alcoholism to be entirely incompatible with duty as pilot, flight engineer, or air traffic controller.

A diagnosis of alcoholism will therefore entail assessment as unfit for all classes of aviation licenses.

The CAA holds the opinion, however, that, with regard to prevention and openness towards this problem, it is important that it be possible, under certain controlled conditions, to reacquire a certificate after detoxification and treatment in cases where the risk of a relapse according to a specialist evaluation can be considered minimal.

Therefore, the CAA has formulated a standard procedure for handling of cases with regard to reacquiring a certificate after a diagnosis of alcoholism has been established:

(Note.— It is suggested that cabin crew be encompassed by this procedure.)

Standard procedure:

No sooner than three months after the temporary revocation of the license because of a diagnosis of alcoholism, the CAA shall by Accredited Medical Conclusion (AMC) evaluate whether the license holder's problem can be considered eliminated and whether the risk of relapse can be considered minimal.

The following five points constitute the provision for re-licensing:

- Completion of treatment (detoxification) under inpatient care in a clinic approved by the CAA (according to the "Minnesota" model with primary treatment of at least four weeks plus family therapy and follow-up care).
- Psychiatric/psychological examination by an accredited specialist in psychiatry approved by the CAA, no sooner than 4 weeks after discharge from the clinic of primary treatment. This examination must have been performed within the last 12 weeks before the case is evaluated by AMC.
- Physical health examination at the Clinic of Aviation Medicine around 12 weeks after discharge from the clinic of primary treatment.
- Written permission from the person in question to discuss his problem with his employer (airline, air traffic control unit).
- Statement from employer (Chief Pilot/ATC supervisor) about alcohol-related problems during duty hours (standard form with formalized questions).

(cont.)

If the CAA decides that recertification can take place, the license holder shall be subject to the following conditions/limitations:

- examination by accredited specialist in psychiatry, approved by the CAA, after 3, 6, 9, 12, 24, 36, and 48 months after the date of issuance of the medical certificate as a minimum;
- examination at the Clinic of Aviation Medicine every 14 days for 6 months, thereafter every 4 weeks for 18 months, and thereafter every 3 months for 1 year after the date of issuance of the medical certificate;
- report from the Chief Pilot/ATC supervisor every 3 months for 4 years (standard report with questions about problems on duty, performance at Periodic Flight Training, number of sick days, problems during night stops, etc.) [In cases where the person is not employed by an airline and consequently cannot meet the requirement for a declaration from Chief Pilot or ATC supervisor, this declaration can be replaced by a declaration from another relevant party or person as decided by the CAA in each case.]
- limitation of the license for duty as CO-PILOT ONLY for a period of two years after the date of issuance and hereafter for further two years with the limitation AS OR WITH QUALIFIED CO-PILOT ONLY.
- For air traffic controllers, the license is limited to duty not alone for a period of 4 years.
- A relapse entails an assessment of permanent unfitness.

Recertification after diagnosis of alcoholism (cont.)

STANDARD LETTER FROM THE CAA

To: (Name, address)
Subject: Conditional Health Acceptance for Licensing as Commercial Pilot.

The Civil Aviation Administration has now received medical information from the Clinic of Aviation Medicine, University Hospital of Copenhagen. Further, your situation has been discussed with your regional Chief Pilot, _____.

I am very pleased to be able to inform you that the CAA has now decided to issue to you a medical certificate for Danish license as a commercial pilot, subject to the following conditions:

- examination at the Clinic of Aviation Medicine every 14th day for the coming 6 months, thereafter every 4th week during the ensuing 18 months, and thereafter every 3rd month for a further 1 year, all counted from the date of issuance of your medical certificate;

- examination by accredited specialist in psychiatry, Dr. _____, University Hospital of Copenhagen, after 3, 6, 9, 12, 24, 36 and 48 months, counted from the date of issuance of your medical certificate;

- a report from your Chief Pilot every third month for four years, counted from the date of issuance of your medical certificate, concerning alcohol-related problems during duty hours, performance at Periodic Flight Training, number of sick days, etc. (A special form for this purpose is issued by the CAA, and 16 copies are enclosed.)

Furthermore, the following restrictions are applied:

- flight duty as CO-PILOT ONLY during the first 2 years, thereafter AS OR WITH A QUALIFIED CO-PILOT ONLY for a further two years, counted from the date of the issuance of your medical certificate.

Finally, but most importantly:

- any relapse will entail permanent assessment as unfit.

Sincerely,

Chief Medical Officer

cc: Regional Chief Pilot,
(Employer)
Clinic of Aviation Medicine, University Hospital, Copenhagen.

Recertification after diagnosis of alcoholism (cont.)

DECLARATION from the employer (standard form)

Danish Civil Aviation Administration
Chief Medical Officer

To the Chief Pilot

One of the conditions for retaining a license after a period of alcohol abuse is that the Chief Pilot of the license holder submits a report about this person to the Civil Aviation Administration every three months for a period of four years.

I the undersigned am subject to such a condition and consequently I hereby invite you to answer the following questions and forward the completed declaration with your signature to the Chief Medical Officer of the Civil Aviation Administration.

Date: _____ Name: _____ ID number: _____

Signature: _____

DECLARATION
confidential (when completed)

Name: _____ has been employed during the preceding three months as:

1. pilot-in-commane ☐ 2. co-pilot ☐ 3. flight engineer ☐ 4. cabin crew ☐

Have there been episodes during the last three months which can be related to alcohol use?

☐ YES ☐ NO

How many sick days has the person had during the last three months? ___ days

How many times has the person been absent because of sickness during the last three months? ___ times

Has the person performed satisfactorily at Periodic Flight Training/Line Checks/revision courses, etc.? ☐

YES ☐ NO

Comments, if any:

Date: _____ Name: _____

Signature: _____ Airline/Company: _____

NOTIFICATION OF POSSIBLE MEDICAL DISQUALIFICATION

(SAMPLE adapted from United States FAA Policy, 1995)

TO: (Employee)

FROM: Medical Department

SUBJECT: Suspension from duties

This is to advise you that I have received information indicating that you may have a substance use problem.

Problematic substance use and dependence are serious conditions that would, if present, render you medically disqualified to perform your duties.

I am therefore temporarily suspending you from duties requiring medical qualification, pending an evaluation to determine whether you remain medically qualified.

If I determine that you are fit, you will be returned to your duties. However, because you engaged in conduct that is contrary to safety, your return to duty may be conditional upon your agreement to periodic evaluation.

If I determine that you are not medically qualified, your medical certification will be withdrawn.

Reinstatement of your certification will occur upon your successful completion of the treatment and rehabilitation programme established within this company. An individual rehabilitation plan, based on the results of your evaluation, will be established by this department.

Your return to duty afterwards may be conditional upon your agreement to undergo periodic re-evaluation, including biochemical testing.

_____ M.D.

_____ Employee

CONDITIONAL REINSTATEMENT LETTER

(SAMPLE adapted from United States FAA Employees Policy, 1995)

TO: (Employee)
FROM: Medical Department
SUBJECT: Return to duty following problematic substance use

An evaluation by this Department on _____ indicated that you have engaged in problematic substance use.

(Details of event to be inserted here)

As an aviation employee you are placed in a demanding position with responsibility for the lives and property of others. The safe performance of your duties requires that your mental and physical abilities remain unimpaired and that you act with professionalism.

Problematic substance use is unacceptable in our workplace, as in any aviation workplace. It is our policy to terminate any employee, who engages in this type of conduct. However, based on your work history, we believe that you have the potential to overcome this situation and return to duty.

Therefore we offer you the opportunity to return to your position, contingent on the following:

(Depending on the individual's history of problematic substance use, the employee will have to agree to some or all of the following elements.)

- You must take a biochemical test for (*alcohol/psychoactive substances*) to determine that you are abstinent.
- You must continue to abstain from (*alcohol/psychoactive substances*). Involvement in any use of (*alcohol/psychoactive substances*) on or off duty will constitute a violation of this condition.
- You must undergo periodic evaluation by the Medical Department to ensure that you have remained abstinent. Such evaluation may include biochemical testing.
- You must enter and successfully complete (*residential programme/ outpatient programme*) conducted by _____.
- You must attend continued care meetings with a designated counsellor in accordance with the schedule established by the counsellor.
- You must attend a minimum of _____ meetings per (*day/week/month*) with your company's peer or any self-help group appropriate for your diagnosis.
- You must obtain a sponsor from the self-help group identified above by _____ (date).
- You must notify this office, in advance, if you cannot meet any of the scheduled activities.

Although we fully support your efforts to overcome your difficulties, our first priority must be safety. Therefore, failure to comply with any of these conditions may result in immediate termination of employment.

_____ (Appropriate Official)

I agree to the conditions outlined above and understand that a failure to abide by any condition may result in the immediate termination of my employment.

_____ (Employee) _____ (Date)

Attachment E

BIOCHEMICAL TESTING

DRUG DETECTION PERIODS
(in urine)

Detection periods vary; rates of metabolism and excretion are different for each drug and use. Detection periods should be viewed as estimates.

Drug	Detection period
Amphetamines	2-7 days
Barbiturates	
General	2-4 days
Secobarbital	up to 30 days
Benzodiazepines	up to 30 days
Cocaine (benzoylecgonine)	2-5 days
Marijuana (THC)	
Casual use	2-14 days
Chronic use	up to 30 days
Ethanol	12-24 hours
Methaqualone	2-4 days
Opiates	2-4 days
Phencyclidine	
Casual use	2-7 days
Chronic use	up to 30 days

EMPLOYER POLICY ON PROBLEMATIC SUBSTANCE USE PREVENTION

(SAMPLE — includes testing programme adapted from United States FAA regulations)

SUMMARY

(Employer) is dedicated to maintaining a workplace that is free from the adverse effects of alcohol or other drug abuse. We have an obligation not only to our customers, but also to each other to ensure that we perform our duties to the best of our abilities.

To that end, (Employer) prohibits certain conduct by all (Employer) employees, and requires testing of persons who perform specified safety-sensitive functions. All biochemical tests for psychoactive substances must be performed in accordance with strict procedures to ensure quality, and all alcohol tests must be conducted by qualified technicians on evidential breath testing devices. Persons who violate our policy will be subject to consequences required by law, including removal from safety-sensitive functions. In addition, (Employer) has established its own policies with respect to employees who engage in problematic substance use.

IMPLEMENTATION DATE: _____

A copy of this policy will be distributed to each employee prior to the start of testing and to each person subsequently hired by (Employer).

CONTACT PERSON: _____ [Name, telephone number]

PROHIBITED CONDUCT:

POSSESSION AND USE OF ALCOHOL:

- Alcoholic beverages shall not be served on company premises or in any company work environment (excluding service to passengers); at any company function occurring during regular business hours; at any meeting conducted for the purpose of internal company affairs; or at any company function attended by children.

- Although beer and wine may be served at company social functions occurring off-premises and after business hours, employees who are planning the function shall make appropriate transportation arrangements for persons who consume alcohol.

- No employee shall consume alcohol during his or her work period or report for work or remain at work while under the influence of alcohol

- Safety-sensitive employees shall not report for work or remain at work within 8 hours of consuming alcohol or with an alcohol reading (as indicated by a breath alcohol test) of 0.04 per cent or greater.

(cont.)

POSSESSION AND USE OF DRUGS:

- The possession, use, sale or distribution of any psychoactive substance on company premises or in any company work environment is prohibited; however, possession or use of psychoactive substances for medical purposes is permissible if:

  — the employee notifies a supervisor of the medication;

  — the medication was prescribed for treatment of a current condition by an accredited physician; and

  — the physician has indicated, and the company agrees, that use of the medication is not inconsistent with the employee's duties.

  The possession or use of over-the-counter medications is permissible if:

  — the medication is for a current medical condition; and

  — use of the medication in accordance with the directions is not inconsistent with the safe performance of the employee's duties (safety-sensitive employees must get supervisory approval before performing duties while using any medication containing a psychoactive substance).

CATEGORIES OF EMPLOYEES SUBJECT TO TESTING:

- Persons acting in any of the following safety-sensitive capacities for (Employer) are subject to drug and alcohol testing:

  - Flight crew member
  - Flight attendant
  - Flight instructor
  - Aircraft dispatcher
  - Aircraft maintenance/Preventive maintenance
  - Ground security co-ordinator
  - Aviation screening
  - Air traffic controller

CIRCUMSTANCES THAT REQUIRE TESTING:

Safety-sensitive employees are subject to the following types of tests:

Pre-employment (drugs only)

- This testing will be required of both persons new to the company and current employees moving into safety-sensitive positions.

Post-accident

- Post-accident tests will be required of employees whose performance of duties near the time of the accident cannot be ruled out as a contributing factor to the accident.

(cont.)

Reasonable suspicion

- Employees will only be directed to undergo reasonable suspicion testing based on specific contemporaneous physical, behavioural or performance indicators of possible problematic substance use.

- Credible information from third parties may be used to form the basis to conduct a test; however, to the extent possible, trained supervisors should actually observe the employee before making a testing determination.

Return to duty

- No person can be returned to a safety-sensitive duty after a drug- or alcohol-related problem unless and until he or she passes a drug or alcohol test, or both, depending on the circumstances.

Follow-up

- Any employee returned to duty after undergoing treatment for an alcohol or other drug problem must undergo at least 6 follow-up tests to be conducted in the first 12 months after he or she is back on the job.

Random (drugs only)

- We have carefully assessed both the probability of drug use by our employees and the consequences if any such use should affect our workplace.

- Our current employment data do not indicate that a significant drug problem exists at (Employer). However, the consequences could be catastrophic if any safety-sensitive employee attempts to perform his or her job while impaired.

- There is a high prevalence of cocaine and marijuana use in areas in which employees live. With the recognition that some employees may choose to use these drugs, we require all safety-sensitive employees to submit to random testing for marijuana and cocaine.

- Random testing, with its attendant consequences, is intended to deter employees from using drugs and to detect employees who do not refrain.

PROCEDURES FOR BIOCHEMICAL TESTING:

- All alcohol testing will be conducted using an evidential breath testing device.

- Drug testing will be conducted by laboratory analysis of urine specimens.

(cont.)

- For all testing, the following protections apply:

  - Except in unusual circumstances, employees will be notified of testing in writing.
  - The person conducting the test must show photograph identification to the employee upon request.
  - Every urine specimen collected will be assigned a unique number. Only that number, and not the employee's name, will be provided to the testing laboratory.
  - Employee records pertaining to biochemical testing will be maintained in a secure location with controlled access.
  - Records will be promptly released to the employee or a person identified by the employee.

CONSEQUENCES OF VIOLATING THESE RULES:

Safety-sensitive employees will be immediately removed from their duties following a drug- or alcohol-related incident.

1. The employment of any employee who has a positive drug test or who uses, possesses, distributes or sells drugs in violation of this policy will be terminated.

2. The employment of any employee who registers 0.04 per cent on any blood alcohol test administered by or for (Employer) or who engages in other alcohol misuse will be terminated.

3. Any employee who registers 0.02-0.039 per cent on an alcohol test will be sent home for the day in a unpaid status the first time such a test result is obtained. The employment of any employee who twice registers 0.02-0.039 per cent on (Employer)'s tests will be terminated. In extraordinary circumstances, this company may exercise the right to retest an employee rather than send the employee home.

4. Any employee who asks for assistance for a problematic substance use problem prior to being selected for testing or identified as violating our policies **will not have his or her employment terminated** and will be sent to a substance use professional for evaluation at the company's expense.

5. The employment of any employee who refuses to be tested will be terminated.

6. The company may agree to conditionally reinstate an employee whose employment would otherwise be subject to termination if the employee is diagnosed as having a substance use disorder, obtains treatment for the disorder, and agrees to enter into a "last-chance" agreement with the company.

GUIDANCE FOR MEDICAL REVIEW OFFICERS

(SAMPLE — adapted from United States Department of Transport)

The forms which follow can assist a Medical Review Officer (MRO) in reviewing biochemical tests confirmed as positive by a laboratory. They can be modified as necessary.

Any documentation associated with a review of a positive test result, including completed copies of the model forms, should be maintained. Documentation should also include such things as copies of prescriptions, photocopies of prescription bottles, or notes that a prescription was verified at a pharmacy or by the treating physician. Sometimes you will receive a letter or note from an employee, treating physician or relative. These should be maintained with the records. If you have to consult with the Laboratory Director or collection personnel, this should be noted.

Finally, MRO records should be segregated from other records you may keep on an individual. This may be less important in an occupational setting, but it is strongly recommended for practitioners who may also serve as a primary care provider.

EMPLOYEE INTERVIEW CHECKLIST

- ☐ Identify yourself as a physician serving as the Medical Review Officer (MRO) for (Employer), with the duty of receiving and reviewing drug test results. Clearly state that you have been designated the MRO for (Employer's) drug testing program.
- ☐ Establish identity of the employee (i.e. full name, social security or employee identification number, date of birth).
- ☐ Inform employee that medical information discussed during the interview is confidential, and may only be disclosed under very special circumstances. Identify those circumstances.
- ☐ If the employee holds a medical certificate under a DOT agency rule, advise the employee that information regarding drug test results and information supplied by the employee will be provided to the DOT Agency as required by appropriate regulation.
- ☐ Tell the employee you are calling about the specific drug test he/she underwent on the specific date and at the specific location. Inform the employee what drug(s) the specimen tested positive for.
- ☐ Briefly explain the testing process, discussing screening and confirmation testing, and laboratory reporting.
- ☐ If the employee requests the quantitative levels of the confirmed results, provide them if available. If the quantitative levels are not available, the MRO should request them; however, the MRO should not delay the verification decision pending receipt of the quantitative data.

(cont.)

- ☐ Ask for recent medical history, when appropriate.
  - ☐ Prescription drugs
  - ☐ Over-the-counter drugs
  - ☐ Medical or dental procedures
  - ☐ Food ingestion
- ☐ Request the employee to provide medical records or documentation of prescription for controlled substance when appropriate. Set a specific deadline for receipt of the medical records.
- ☐ Request the employee to undergo a medical examination or evaluation, when appropriate. Make arrangements for medical evaluation.
- ☐ Notify the employee that he or she may request a split specimen test, and explain this process. Provide information about payment for this test in accordance with employer's policy, if appropriate. Tell the employee that a split specimen test will not delay verification of the initial test result.
- ☐ If the verification process is complete, inform the employee that the appropriate employer official will be notified.
- ☐ If the test result was verified positive, inform the employee of the Employee Assistance Programme made available by the employer, as appropriate.
- ☐ Offer to answer any further questions.
- ☐ Give your name and telephone number in case the employee has any further questions.

Guidance for Medical Review Officers (cont.)

VERIFICATION WORKSHEET	
Employee Name: (Last) (First) (Middle initial)	
Employee SSN or ID No.:	Date of birth:
Date of collection:	
Specimen ID No.:	
Date positive result received:	Time:
Date of initial contact with employee:	
Initial contact made by: ☐ Employee refused to discuss test result, declined interview with MRO. ☐ Medical records are forthcoming. Date expected:	
Date MRO interview conducted:	Time:
Date medical examination conducted (if applicable): Time: Examining physician's name: Address: Telephone:	
Date test of split specimen ordered (if applicable): Result and date received:	
Comments/attempts to contact employee/interview details:	
Date employee notified of verified result:	Time:
Date employer notified of verified result:	Time:
Employer contact: Address: Telephone:	
Date DOT agency notified of verified result (if applicable):	Time:
Name of DOT agency and contact:	
General comments:	
Verification decision	
☐ Positive	Drug (specify):
☐ Negative	Test cancelled:
Reason for test cancellation:	
MRO signature:	
Date:	

Guidance for Medical Review Officers (cont.)

RETURN TO DUTY WORKSHEET			
Employee Name: (Last) (First) (Middle Initial)			
Employee SSN or ID No.:		Date of birth:	
Address:			
Telephone (home):		Telephone (work):	
Employer name and address:			
Contact person telephone:			
Date of positive test (collected):			
Specimen ID No.:		Date test verified:	
Rehabilitation programme:			
Date begun:		Date completed:	
Inpatient treatment facility:			
Contact name:			
Telephone:			
Discharge diagnosis:			
Outpatient treatment facility or provider:			
Contact name:			
Telephone:			
Aftercare plans:			
Post-rehabilitation testing:			
Recommended schedule:			
Recommended duration:			
Date of return to duty test:		Result:	
Date of return to safety-sensitive duty:			
Name of supervisor:		Telephone:	
Testing during rehabilitation:			
Date:	Results:	Date:	Results:
Date:	Results:	Date:	Results:
Date:	Results:	Date:	Results:
Date:	Results:	Date:	Results:
Date:	Results:	Date:	Results:
Date:	Results:	Date:	Results:
Date:	Results:	Date:	Results:
Termination date (if applicable):			
Comments:			

Attachment F

EXTRACTS FROM THE ICAO MANUAL OF CIVIL AVIATION MEDICINE

Chapter 13. HAZARDS OF MEDICATION AND DRUGS

INTRODUCTION

It is obvious that medical illness in a pilot can represent a flying safety hazard. Aircraft accidents have occurred as a result of pilot disability related to disease and/or drug therapy. Illnesses that interfere with safe aircraft operations may be only minor problems in other occupational settings. The common cold, minor gastroenteritis, headaches, mild vertigo, and otitis media, while not precluding work in an office, may pose significant hazards to the pilot flying in bad weather or heavy traffic. What is "minor" to an administrator may be a "major" problem for the on-duty pilot. Accordingly, one must not only be concerned with the effects of disease on flying ability but also with the possible effect of drug therapy utilized to treat the illness in question. In Annex 2 it is stated:

2.5 Use of intoxicating liquor, narcotics or drugs

> No person shall pilot an aircraft, or act as a flight crew member of an aircraft, while under the influence of intoxicating liquor or any narcotic or drug, by reason of which his capacity so to act is impaired.

It should be pointed out that on occasions medications are utilized not for illness but as a preventive measure, e.g. anti-malarial agents, anti-hepatitis vaccines, anti-diarrhoeals, antibiotics, etc. The possible air safety impact of preventive medications is a consideration particularly encountered in tropical operations.

Not only must the medical examiner consider the expected pharmacological effects of a given drug but also the possibility of unwanted side-effects and idiosyncrasy. All considerations of drug therapy as applied to a flight crew member must be in compliance with the provisions of Annex 1.

This chapter concerns the flight safety aspects of the major classes of therapeutic medications. Its purpose is to aid in the implementation of the provisions of Annex 1 in a manner to achieve international uniformity in the safest disposition of pilots undergoing drug therapy. Certainly a knowledge of the operational aspects and working conditions pertaining to the pilot is essential in making decisions concerning drug therapy. Reference is made to Part I, Chapter 1, of this manual.

PRINCIPLES OF DRUG TREATMENT AND FLIGHT SAFETY

In considering whether a pilot should remain on flying status while on drug therapy, certain questions should be asked:

a) Is the disease process for which drug therapy is necessary in itself disqualifying for flying?
b) What are the usual and expected pharmacological actions of the drug in question and what is the duration of these effects?
c) What are the possible side-effects and their duration, where "side effects" refers to undesired responses to drug therapy.

If the answer to the first question is in the affirmative according to the provisions of Annex 1, then the question of drug therapy is only academic since the pilot would be disqualified by the medical disorder *per se*. If the disorder to be treated does not preclude flying, then questions b) and c) become paramount.

While there are many therapeutic drugs in use today and while the pharmaco-physiology of drugs is a complex science, one can approach the problem of drug therapy in the pilot by considering the problem from the aspect of undesirable (i.e. unsafe) responses to therapy. Virtually all drugs not accepted for flying duties, *regardless of the nature of the disorder being treated*, have at least one or all of the following effects:

a) central nervous system depression;
b) autonomic nervous system disorder;
c) disorder in equilibrium.

That is, unless a therapeutic drug has one or more of these properties it could probably be taken while flying, *provided* the disease being treated is not in itself disqualifying. There are a few exceptions to this principle pertaining to the central and autonomic nervous systems and these will be considered later.

PHARMACOLOGICAL ACTIONS UNDESIRABLE FROM THE STANDPOINT OF FLIGHT SAFETY

The varieties of possible actions of therapeutic drugs are great in number, but it is possible to define the major and most common drug effects encountered as related to flight safety.

Central nervous system depressants

It is obvious that depression of the central nervous system would be expected to render a pilot unfit for duty. The value of an alert mind and clear thought processes needs no discussion or defence. It can be stated definitely that sedatives, hypnotics, narcotics, etc. prohibit flying until sufficient time has lapsed after the last dose to allow complete metabolism of the drug in question. The same principle applies to the air traffic controller whose role in flight safety is obvious. Individual variation can be quite wide with respect to the metabolism of depressants, so any general rule of conduct must be very conservative. It is for this reason that in general a 24-hour period is suggested prior to resumption of flight duties after administration of a central nervous system depressant. It is certainly true that short-term hypnotics exist that can be used and still allow the pilot to return to duty even 12 hours after ingestion of the sedative, e.g. flurazepam hydrochloride (Dalmane) in a dose of 15 mg. Under *well-supervised* operational conditions, it may be *safer* for a pilot to use a short-acting hypnotic between flight segments involving extremely long-term flight operations to assure adequate sleep during rest periods.

It would be undesirable for flight crews to engage in such medication patterns without medical supervision and such self-medication should be prohibited. The major therapeutic central nervous system depressants are:

opiates (paregoric, opium);
morphine and its derivatives;
codeine and its derivatives;
methadone group (Darvon, Dolophine);
meperidines (Demerol, Lomotil, Pethidine);
barbiturates;
bromides;
ureides, carbamates, (Placidyl, Valmid);
glutethimides (Doriden, Noludar, Quaalude);
flurazepam, nitrazepan, methaqualone;
antihistaminics.

Note that the above list contains drugs used for a wide variety of therapeutic purposes (e.g. antispasmodics, anti-allergics, analgesics, etc.) but all have the common effect of central nervous system depression, and hence disqualify a pilot using them.

Drugs affecting the autonomic nervous system

Since the autonomic (involuntary or vegetative) nervous system affects virtually all body systems with the exception of the skeletal (voluntary) musculature, it is obvious that "autonomic drugs" would be expected to have a variety of complex effects. Stimulation of the sympathetic (thoraco-lumbar, sympatho-adrenal, or adrenergic) portion of the autonomic system can induce tachycardia, increased cardiac output, mydriasis, lessened fatigue, raised blood sugar levels, rise in body temperature, peripheral vaso-constrictions, and a general response to overcome stress.

Parasympathetic (cholinergic or craniosacral) discharge tends to produce bradycardia, lower blood pressure and cardiac output, miosis, increased gastrointestinal activity, peripheral vasodilation, and contraction of the bladder and rectum. Predominance of one of these two autonomic systems can be achieved by either direct stimulation of the system in question or inhibition of the other. Sympathetic discharge is essential in times of stress or emergency.

Sympathomimetic drugs, which in a sense would seem to be useful in producing a state of alertness and efficiency and help to overcome fatigue, are not advised for civil aviation operations because of their potential for causing agitation, nervousness, tremors, tachycardia, irritability, and impaired judgement. Examples of the more commonly used sympathomimetic drugs are: ephedrine; adrenalin; amphetamine; isoproterenol.

Parasympathetic depressants do not usually produce the dramatic sympathetic discharge following administration of a sympathomimetic drug but rather tend to induce mydriasis, dry mouth, and urinary bladder hesitancy. A pre-existent glaucoma could also be severely aggravated. While such effects are usually not severe, especially in certain modern preparations, it is safer to prohibit their usage by active flight crew members. Some examples of drugs of this type are: atropine and its derivatives; belladonna.

Parasympathetic stimulants, or parasympathomimetic drugs tend to produce painful contractions in the gastro-intestinal tract, diarrhoea, bronchial constriction, perspiration, and bradycardia. Obviously such effects could interfere with the safe conduct of flight duties. Some examples of drugs in this class are: bethanechol; methacholine; pilocarpine.

The anticholinesterases simulate the effects of the parasympathomimetic drugs and in addition produce skeletal muscle weakness. Examples of these agents are: neostigmine; physostigmine.

Anticholinesterase intoxication has long been recognized as a hazard for pilots engaged in "crop dusting" with certain organophosphates and carbamates for purposes of insect control.

Sympathetic depressants (sympatholytics) tend to be less predictable than those agents noted above but in general

may be expected to produce postural hypotension, bradycardia, sedation, weakness, and mental confusion. In some cases one might observe tachycardia and hyperventilation, seemingly effects of sympathetic stimulation rather than depression. Examples of this class of drugs are: methyldopa; guanethidine; ganglionic blockers (hexamethonium, pentolinium); rauwolfia group; dihydroergotamine alkaloids.

The first four of the above will be recognized as commonly used antihypertensive medications.

In summary, then, the autonomic agents, a class of drugs with complex effects on the autonomic nervous system, are in general contraindicated for use while serving as a flight crew member.

Analgesic drugs

Drugs to treat pain can be divided into two main classes: narcotic and non-narcotic.

The narcotic analgesics are prohibited from use by an active pilot simply because of the general depressant effects of the narcotics. It should also be pointed out that any pain severe enough to warrant a narcotic should in itself be disqualifying for flying. The most commonly used narcotic analgesics are: opium derivatives; morphine derivatives; methadone group; meperidine group.

The non-narcotic analgesics ordinarily do not have direct effects that would preclude flying duties. The question of air safety while using non-narcotic medications for pain should primarily concern the issues of the severity of the pain and the cause of the pain. If the pain is severe enough to be distracting and/or if the condition causing the pain is in itself disqualifying, then flying should be prohibited. Non-narcotic analgesics can be exemplified as follows: salicylates; aniline derivatives (Tylenol, Phenacetin, etc.); paracetamol; pyrazolon derivatives; phenylbutazone; proporyphene.

Codeine in small doses (15 mg every six hours) is probably safe for flying. Small doses of codeine are often combined with salicylates, phenacetin, or other non-narcotic analgesics and these combinations should be safe for flying as long as usual therapeutic doses are not exceeded.

As is the case with all drug therapy, the medical examiner must always be aware of drug idiosyncracy and be certain the pilot-patient tolerates the drug well before resuming flying activities during such usage.

Certain minor sugical procedures such as dentistry may require local or regional anaesthesia or even general anaesthesia. Any such case should be grounded until the effects of anaesthesia have completely cleared and the possibility of post-treatment complications seems remote.

Antihypertensives

With the advent of a number of safe and effective antihypertensive drugs, many pilots who would have been disqualified in previous years because of hypertension can now remain on flying status. Most cases of benign essential hypertension will respond favourably to certain general health measures and one or a combination of the following types of antihypertensive medications: diuretics; beta adrenergic inhibitors; calcium inhibitors.

Not all preparations within each of these three great classes are acceptable for the active pilot but some of the more commonly used agents of these types can be considered safe for flying: diuretics (thiazides, hydrochlorthiazide, triamterene, spirolactone); beta-blockers (propranolol, metoprolol, nadolol, atenolol); calcium "blockade" agents (nifedipine).

It should be re-emphasized that no matter what agent is utilized, a trial period of several weeks prior to return to flying activities must be observed to rule out adverse side-effects and drug idiosyncracy. Even if the diuretics seem to be tolerated well, one still must maintain patient surveillance for possible hypokalaemia, hyperuricaemia, and raised blood sugar levels. These chemical effects do not usually preclude flying but may necessitate additional therapeutic measures, e.g. potassium supplements or uricosuric therapy.

Certain classes of antihypertensives, especially the non-diuretics, while commonly used in medical practice should be considered prohibitive for flying: rauwolfia alkaloids; methyldopa; hydralazine; guanethidine; minoxidil; hydrolazine; clonidine.

Regardless of the type of drug therapy employed, the following general measures should be applied to every case: obesity control, salt restriction, and regular exercise conditioning.

All therapy should be initiated using minimal therapeutic doses, increasing the dosage only as necessary. As a general rule, one does not wish to utilize the same full dosage in a pilot that one might not hesitate to use in a non-pilot patient. For example, 160 mg of propanolol daily may be appropriate for some patients, but not for the pilot patient.

Miscellaneous drug groups

Special attention has been given to those drugs that affect the central and autonomic nervous systems, because of the crucial nature of such effects; the antihypertensive drugs have been emphasized because of certain practical aspects that were cited. There are many other drugs, however, that must also be mentioned because of their widespread usage.

These drugs are generally not flying hazards *per se* and may well be appropriate for usage by flight crews under certain circumstances.

Antihistamines are typically sedative in their action and should be discouraged during flying activities. It is also likely that if a pilot is having allergic symptoms severe enough to require medication, he probably should not be flying. Certain non-disqualifying allergic disorders, however, may well be treated by mild antihistamines such as brompheniramine or dexchlorpheniramine. A clinical trial before resumption of flying duties would be required to make a final decision concerning usage while flying.

Antibiotics administered orally are, in general, safe for flying. The major flight safety issue is usually the effect of the infection being treated rather than the antibiotic being used.

Antitussives, if non-narcotic, and not combined with sedative agents or antihistamines, are not contraindicated for flying.

Antacids in an essentially insoluble form should be permitted for flying but only if the symptoms being treated are not clinically significant.

Cimetidine (Tagamet) should not pose a safety hazard once it has been established that no untoward side effects occur during a trial period while not flying.

Steroids, in general, are prohibitive for flying because of the complex nature of their action and because the disorders usually requiring such therapy are in themselves disqualifying. However, "physiological replacement therapy" as, for example, might be indicated for a stable case of adrenal gland insufficiency, may be permissible while flying. Clinical experience would indicate that a "physiological" dose relative to prednisone would be 6-8 mg daily for males and 4-6 mg daily for females. The following table shows equivalent dosages for various steroid preparations in common usage:

Steroid	*Equivalent doses (mg)*
Cortisone actate	25
Hydrocortisone	20
Prednisone	5
Methylprednisone	4
Triamcinolone	4
Dexamethasone	0.75
Betamethasone	0.60

Pilots on steroid therapy should have regular medical surveillance at intervals of probably no longer than six months. Any pilot on steroid therapy should be well instructed in the principles of steroid therapy, including the possible effects of injury, intercurrent infections, or sudden interruption of therapy.

There are, of course, numerous other types of drugs, e.g. digitalis preparations, antiemetics, anticonvulsants, hypoglycaemics, or psychoactive drugs (tranquillizers and anti-depressants), many of which may not *per se* produce harmful effects but which would not likely be used for any but a disqualifying medical disorder.

Nonsteroidal anti-inflammatory drugs

Anti-inflammatory agents, not having the properties of corticosteroids and the undesirable side-effects of steroids, have been developed to meet the needs of anti-inflammatory therapy. At the present time, the most popular are: Ibeuprofen, Naproxen, Indomethacin, Sulindac, and Piroxican. All are effective in the treatment of various inflammatory disorders involving the musculoskeletal system. However, they have a tendency for side-effects that exceed those of aspirin compounds. The most common side-effects are dizziness, headaches, gastrointestinal irritation, gastric ulcers, and in some cases gastrointestinal bleeding. Although Naproxen and Sulindac may be less prone than the others to produce such side-effects, this group of medications in general, would seem to be undesirable while serving as a pilot because of the distinct possibility of undesirable side-effects. The musculoskeletal disorder under treatment, may itself be disqualifying for flying. That is, a pilot with an arthralgia or tendinitis painful enough to require this class of medication more than likely should at least be temporarily grounded. Even if the discomfort being treated is relatively mild, the tendency for these preparations to induce unpleasant side-effects would seem to preclude usage by the active pilot. Nevertheless, careful observations by a qualified physician may identify certain patients who can tolerate these medications without unsafe side-effects, in which case a return to flying could be considered. Such cases would not only require careful evaluation but also regular surveillance after being returned to flying status.

Social Drugs

The term "social drug" refers to agents taken not for the treatment of disease, but for pleasure or other personal reasons. The chief examples of this class are: alcohol; tobacco; illicit drugs.

Alcohol

The following table indicates the average alcohol blood levels expected in various-sized individuals after a given number of average "drinks":

Body weight (Kg)	Number of drinks 1	2	3	4
	(milligrams per cent)			
64	0.027	0.054	0.080	0.107
72	0.023	0.047	0.070	0.094
80	0.021	0.042	0.063	0.083
90	0.019	0.038	0.056	0.075

These values will prevail at about 30 minutes after ingestion, and will decline at a rate depending upon a variety of factors such as activity, food ingestion, and individual tolerances. In general, it can be stated that a healthy individual will metabolize alcohol at a rate sufficient to decrease the blood concentration by 0.015 per cent (15 mg alcohol per 100 mL blood = 15 mg%) each hour. A blood level of 0.1 per cent (100 mg%) is generally accepted as the intoxication level. Some individuals manifest performance degradation at levels as low as 50 mg%. It should be the rule that a pilot should not fly with any detectable alcohol blood level at all. Furthermore, blood level is not the sole determinant of flying safety after drinking because an individual may have reduced his blood alcohol level to zero but still be significantly impaired due to "hangover". It is for this reason that many commercial airlines insist upon a 24-hour period of abstinence from alcohol before flying. The United States Federal Aviation Administration regulations require only eight hours of abstinence from alcohol before flight with respect to private aircraft operation. This would be adequate for a non-intoxicating social drink but not for recovery from a period of heavy drinking.

Tobacco

It is beyond the scope of this section to provide a detailed discussion of the well-documented health hazards of smoking. The ill effects relative to the pulmonary and cardiovascular systems (e.g. chronic bronchitis, chronic obstructive lung disease, bronchial malignancy, and coronary artery disease) are not the only considerations from the standpoint of air safety, however. Decreased altitude tolerance secondary to the displacement of oxyhaemoglobin by methemoglobin, increased fatigue, conjunctival irritation, and decreased night vision have also been demonstrated as a result of smoking. There really is no justification for smoking on the part of a pilot (or anyone else for that matter).

Illicit drugs

The following are some of the more common drugs used by individuals in today's society: cannabis sativa (marijuana); cocaine; heroin; hashish; mescaline; LSD (d-lysergic acid).

Other agents are also used to alter the mental state and all produce effects absolutely incompatible with flying. It is not only the drug effects *per se* that are of concern but also the psychological factors that would lead an individual to use them. One would have difficulty in having confidence in a pilot who uses such agents, even if he presumably has completely metabolized a given dosage. The fear of "flash-back" is always present in any hallucinogen.

These same admonitions apply to the illicit usage of legitimate drugs such as amphetamines, barbiturates and other stimulants and depressants intended for prescription use by licensed physicians only. While some argue that marijuana is "no worse than alcohol", it does not seem justified on the basis of studies thus far to assume that "marijuana is no worse than social drinking". The responsible pilot should not be a user of marijuana.

Psychoactive Drugs

Some of the more commonly used psychoactive drugs are: chlorpromazine; chlorprothixene; thioridazine; diazepam (Valium); prochlorperazine.

Other "tricyclics" can be named. All drugs given for anxiety or depression are precluded for flying not only because of depressive effects but because of the psychiatric disorder being treated. If a pilot has an emotional disturbance severe enough to require drug therapy, he should be grounded.

SUMMARY

The flight safety aspects of drug therapy should be in regard only to therapy for medical disorders which in themselves do not prohibit flying. If a medical problem is *not* disqualifying for therapy, then it is clear that the possible effects of therapeutic drugs themselves are at issue. Any therapeutic agent that may interfere with mentation, alertness, vision, co-ordination, judgement, etc. should be prohibited for flying. The major classes of drugs most commonly used have been discussed here as well as certain "non- therapeutic" agents, such as alcohol and illicit drugs.

Chapter 9. MENTAL FITNESS AND NEUROLOGICAL EXAMINATION

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Drug dependence[3]

Drugs, in the context of this chapter, are substances which alter the mental state in a pleasurable way, alleviate physical or mental pain or counteract boredom. The use of drugs has been hallowed by tradition. Alcohol has been the customary antidote to the stresses of life in the West, opium is favoured in the Far East and hashish (marijuana) in the Middle East. Drug abuse refers to taking drugs for other than medical reasons.

Psychic dependence as discussed in this chapter, is a condition induced by repeated use of such drugs as morphine, alcohol, barbiturates, amphetamines, etc. It is characterized by an urge or need to continue taking the drug. The opioid group (morphine-like drugs, naturally occurring or synthetic), barbiturates and alcohol may cause, in addition to psychic dependence, a physical dependence with resultant withdrawal symptoms on sudden cessation of the drug. Psychic dependence and physical dependence occurring together usually lead to a more profound craving — a compulsion to continue taking the drug; this stage is designated as drug addiction.

The current recommendation of WHO is to use the term "drug dependence" to include both psychic dependence and addiction; the type of drug dependence should always be stated, e.g. drug dependence of marijuana type or drug dependence of alcohol type. This proposal does away with the invidious difficulty of trying to choose between the state of addiction considered to be a medical condition beyond the power of the victim to resist and psychic dependence (habituation) which could be corrected by an effort of will.

Drugs alter the mental state. Judgement is impaired while the drugs are present in the brain. All drugs should be prohibited for at least twelve hours before take-off.

Drug-taking is a bar to aviation because the habit is so much more common among the unstable and criminal fringe of society that it raises serious doubts about the mental stability of the addict; in the drug dependent the urge to continue taking drugs makes the sufferer unreliable.

Cure of drug dependence is extremely difficult and bedevilled by relapses. A history of drug dependence should be a bar to any form of aviation licence, and although an isolated experimental experience of cannabis is common in otherwise normal adolescents, such incidents should be very carefully investigated before ignoring them as evidence of addiction.

3. See also definition at Appendix B.

Drug dependence of alcohol type (alcoholism or problem drinking)

Unlike other drugs of addiction, alcohol can be purchased legally in most countries. Alcoholism is a vast problem affecting 1 per cent of adult users in the Western Hemisphere. Drug dependence of the alcohol type should be diagnosed if an individual's consumption of alcohol exceeds the amount culturally permitted, or if he habitually drinks at times which are outside the accepted licensing hours or if he injures his health or his social relationship by repeated excessive alcoholic consumption. Drug dependence of the alcohol type is very difficult to cure and may be a great hazard to flight safety because judgement is impaired by alcohol and reaction time is slowed during the hangover phase. For these reasons alcoholism is a bar to holding a flying licence, as mentioned in Annex 1, Chapter 6, unless the applicant abstains completely and then only if accredited medical conclusion considers the prognosis good.

There are factors in the life of a flight crew member which increase temptation to drink. One factor is sleep difficulty; because it is necessary for economic reasons to utilize aircraft and airports 24 hours a day, many flights depart during the night. Consider the crew that has to take off at midnight and fly until dawn. If a crew member stays up until take-off he will be fatigued by landing time. Going to bed at 7 p.m. in an effort to sleep until 11 p.m. is unlikely to be successful. There is a temptation to consume extra alcohol at lunch and sleep through until 7 p.m., then to rise and have a meal and be ready to fly at midnight. There are other temptations that lead to problem drinking: flight crews are often positioned at out-of-the-way airports where they wait to pick up an aircraft whose crew is due for a rest — the slip-crew system. Alcohol counteracts the boredom of these delays. The fatigue of a long flight is considerably lessened by a glass or two of beer on landing — a very comfortable way for the crew to discuss the difficulties of the trip and plans for the next trip before retiring to bed. In private flying clubs there is usually a bar; many of the aviators are wealthy businessmen accustomed to a liberal intake of alcohol. These are some of the pressures that predispose a flight crew member to problem drinking.

The patterns of social drinking seen in aviation are no different from those that occur in other careers:

a) Excess social drinking is probably the most common pattern. A typical example is a licence holder, aged 37, a bachelor who had flown 15 000 hours. An examination revealed ascites, leading to a liver biopsy which confirmed the diagnosis of alcoholic hepatitis. This licence holder had never broken the company's regulations on drinking and flying. He flew regularly one day in six; on the evening of his flight and the other

four days of the six he consumed regularly 8 to 10 pints of beer. There was never the slightest suggestion of inefficiency or clinical evidence of excessive drinking until the ascites developed.

b) Recurrent affective disorder: A senior pilot, aged 45, with 15 000 hours flying to his credit made headlines by haranguing an official gathering of international aviation authorities while he was obviously extremely drunk. He had been suffering from recurrent short-lived bouts of depression lasting 48 hours and recurring every three months. It had always been possible for him to avoid flying on these occasions and he had found that if he stayed at home and consumed an excess of alcohol he got relief from his severe depression. The unfortunate coincidence of a civic function with one of these periods of excessive drinking led to his discovery.

c) Personality disorders in aircrew give rise to two fairly common patterns of problem drinking:
   1) Aggressive psychopaths who normally manage to keep their aggressive tendencies under control may, under the influence of alcohol, exhibit extreme disorders of behaviour which bring them to their employer's attention.
   2) Severely obsessional, meticulous people often alleviate their anxiety with alcohol. A typical example of this is that of a senior pilot who had become an administrator. He was able to deal with his own personal responsibilities and the personal risks involved in flying but when he was put in charge of a large airport and expected to be responsible for all the administration, accounts, etc., his obsessional tendencies quickly led to insomnia which he learned could be controlled by alcohol. He knew that vodka would not leave the tell-tale smell of alcohol on his breath and within 12 months his consumption had risen to the point where he developed an epileptic seizure.

The incidence of alcoholism among crew members is nevertheless as infrequent as might be expected in a profession requiring high degrees of technical skill coupled with great personal responsibility. The rate of loss of professional licences due to problem drinking is less than one in 5 000 per annum. The true incidence may be somewhat higher because of the natural disinclination by patient and employer alike to face up to the reality of dependence upon alcohol.

Alcoholism is difficult to diagnose, as the great majority of sufferers have no insight into their illness and such patients rarely ask for help. Sometimes a clue to the diagnosis is provided by the smell of alcohol on the applicant's breath during routine medical examination. An obvious tremor of the outstretched hands, chronic pharyngitis, a blotchy red face, chronic conjunctivitis, an enlarged liver, absence of deep reflexes or other findings should prompt the designated medical examiner to look for evidence of alcoholism.

In making the diagnosis of drug dependence of alcohol type, information must be obtained from all possible sources. In addition to taking the patient's history the examiner should insist upon seeing a close relative, usually the wife, to get the domestic picture. A report should be obtained from the patient's family doctor in addition to the referral letter by the airline's own medical officer. The opinion of the training captain is invaluable if it can be discreetly obtained without prejudging the issue by suggesting to the employer that the patient is a problem drinker.

In established cases of drug dependence of alcohol type, assessment of an applicant for licensing should not be performed until an observation period of 12 months has elapsed. If an applicant wishes to regain his licence he must abstain from all alcohol completely for this one-year period, during which he is seen by the company doctor or his family doctor at fortnightly intervals and by his psychiatrist at three-month intervals. The psychiatrist should have at each interview a note from the family doctor and from the relative to confirm that the patient has remained completely abstemious.

After 12 months' complete abstinence the applicant may be allowed to resume professional flying on the condition that he is interviewed by a psychiatrist every six months for the next two years with the same evidence of complete abstention. By this time the patient may have developed insight into the severity of his illness and may stand a reasonable chance of remaining free from relapse in the future. A single relapse should lead to permanent withdrawal of his aviation licence.

One major airline is achieving success in rehabilitating professional pilots by early intervention, treatment and relicensing within three to four months.

The system utilizes:

a) *Peer group*, consisting of fellow workers, union or association members and family members, reinforced by exposure to recovering pilot alcoholics and Alcoholics Anonymous.

b) *Management and supervisors*, including the flight operations manager, supervisory and check pilots, simulator and other course instructors.

c) *Medical consultants*. The airline medical officer gathers valuable data for early recognition, out-patient counselling, evaluation and referral to a psychologist. Residential treatment in a recognized rehabilitation centre and psychiatric assessment is followed by a full medical review and "tripartite" debriefing of the pilot.

d) *Regulatory agencies*. The medical and Licensing Authorities review each case on its individual merits and may recommend relicensing with continued close follow-up monitoring by the airline medical officer,

peers, flight operations and regulatory agencies for two years.

The initial process takes approximately one month of clinical evalution, one month of residential treatment and one month of rehabilitation.

Provided the full protocol is followed, successfully treated pilots have been returned to flying in three to four months. This has had the effect of overcoming a "conspiracy of silence" among other affected pilots.

Admonition on the use of intoxicating liquor, narcotics and drugs is provided in Annex 2, 2.5 as follows:

2.5 Use of intoxicating liquor, narcotics or drugs

No person shall pilot an aircraft, or act as a flight crew member of an aircraft, while under the influence of intoxicating liquor or any narcotic or drug, by reason of which his capacity so to act is impaired.

— END —

Order No. 9654
Printed in ICAO

ISBN 978-92-9231-750-8