

# Consumer Labelling and Alcoholic Drinks

REPORT



European Commission

**ias**

**DHS**



This report has been written by Peter Anderson on behalf of the Institute of Alcohol Studies, London.

The report has been funded and prepared under a contract with the European Commission (Grant Agreement no. 2005321). The project under this contract has been also co-financed by the Ministries of Health of Finland, France, Germany and Portugal.

The responsibility for the content of this report lies with the author, and the content does not represent the views of the European Commission; nor is the Commission responsible for any use that may be made of the information contained herein.

This report should be quoted: Deutsche Hauptstelle für Suchtfragen e.V. (DHS) (2008) Consumer Labelling and Alcoholic Drinks. Hamm: DHS

2008 German Centre for Addiction Issues (DHS)

P.O. Box 1369, 59003 Hamm, Germany

Phone: +49 (0) 2381 9015-0

Fax: +49 (0) 2381 9015-30

Email: [info@dhs.de](mailto:info@dhs.de)

Website: [www.dhs.de](http://www.dhs.de)

ISBN: 3-937587-06-3

Edited by Walter Farke

Printed by Achenbach Druck, Hamm





# Contents

<b>Acknowledgements</b>	<b>4</b>
<b>Preface</b>	<b>5</b>
<b>About the author</b>	<b>6</b>
<b>Summary and conclusions</b>	<b>7</b>
<b>1. Introduction</b>	<b>11</b>
1.1. Consumer labelling defined	13
1.2. Method of preparing the report	14
1.3. Structure of the report	15
<b>2. Alcohol as a toxic and dependence producing substance</b>	<b>17</b>
2.1. Alcohol intoxication	19
2.2. Toxic effects of alcohol	20
2.3. The dependence producing properties of alcohol	22
2.4. Alcohol's burden to Europe	23
2.5. Conclusions	25
<b>3. Consumer protection in Europe</b>	<b>27</b>
3.1. Consumer policy in Europe	28
3.2. Labelling and packaging in Europe	29
3.3. Alcohol labelling and packaging	31
3.4. Public support for warning labels	33
3.5. Conclusions	33
<b>4. Consumer information and alcohol policy</b>	<b>35</b>
4.1. Marketing of alcoholic products	36
4.2. Other educational approaches	38
4.3. Labelling of alcoholic products	43
4.4. Conclusions	49
<b>5. Conclusions and recommendations</b>	<b>51</b>
5.1. Conclusions	52
5.2. Recommendations	53
<b>References</b>	<b>54</b>

# Acknowledgements

This report has been prepared by the author on behalf of the Institute of Alcohol Studies, London as part of the Pathways for Health Project. Many people have been involved in a consultation process reviewing, commenting and contributing to different drafts of the report, including members of the Pathways for Health Project. In particular, I wish to thank Ingrid Vanhaevre of OIVO-CRIOC, the Belgian Centre of Research and Information for Consumer Organizations.

Needless to say, any errors or omissions in the content of the report are the sole responsibility of the author.

# Preface

Alcohol is a psychoactive drug implicated in at least sixty diseases. Any other product as potentially dangerous as this would almost certainly be festooned with warning labels, assuming, that is, that it were allowed to be on open sale.

Alcoholic beverages are treated differently. While some countries have now begun to insist on warning labels being attached to alcohol products, notably in relation to the dangers of drinking during pregnancy, in general policy remains hesitant, and the issue is still seen as controversial, despite the fact that, as this report explains, the large majority of the European population support the idea of warning labels.

This report is an important contribution to the debate on warning labels. It considers the case for requiring them and what their introduction might be expected to achieve, based on a comprehensive review of the international experience not only of alcohol labelling but also the labelling of tobacco products. Clearly, there are lessons to be learnt from this experience, and while few would suggest that labels are any kind of panacea, this report suggests that the idea is worth pursuing as part of a comprehensive approach to reducing alcohol harm.

**Andrew McNeill, Institute of Alcohol Studies**

# About the author

**Dr. Peter Anderson MD, MPH, PhD**

International public health consultant

Peteranderson.mail@gmail.com

Dr. Anderson is trained as a general practitioner and specialist in public health medicine at the University of Oxford and the London School of Hygiene and Tropical Medicine. His PhD was on the risk of alcohol, and he is currently a consultant in alcohol policy. He was the regional advisor for both alcohol and tobacco with the European Office of the World Health Organization from 1992 to 2000. Since 2001, he has been working as an independent consultant, and has been an adviser in the field of addictions to the European Commission, the World Health Organization and several governments. He was the author of a 400 page report for the European Commission on Alcohol in Europe, translating the evidence base and experience of alcohol policy and prevention programmes for policy makers, programme implementers and researchers. He has an extensive research background in alcohol epidemiology, intervention research, randomized trials, prevention projects and meta-analytical techniques. He has over 120 publications in peer reviewed journals and is the author or editor of 15 books.

## Summary and Conclusions

**Alcohol, no ordinary commodity, is a ubiquitous toxin that can harm almost any system or organ of the body leading to more than 60 different acute and chronic disorders**

Alcohol (ethyl alcohol, ethanol) is a chemical solvent that has toxic effects on the body. It is also drug which has psychoactive effects that underlie its capacity to produce alcohol dependence. Alcohol can also exacerbate pre-existing mental and physical disorders, adversely interact with other prescribed and illicit drugs in the body, and contribute to a wide range of social problems. A great deal is known about the toxic and pharmacological effects of alcohol that underlie alcohol related harm, all of which are of concern to consumer protection. Alcohol is a carcinogen (cancer causing agent) for a wide range of cancers and is toxic to the liver and cardiovascular and immune systems. Alcohol is also teratogenic, being toxic to the foetus, where there is no evidence for a safe level of alcohol consumption. Alcohol is an intoxicant, leading to a wide range of adverse effects including risk taking behaviour (such as unprotected sexual activity), accidents and injuries (also while driving vehicles or operating machinery), violence, and acute alcohol poisoning that also pose a significant risk to third parties. There is wide individual variation in the toxic effects of consuming a given amount of alcohol. Further the effects of alcohol show no threshold below which alcohol can be regarded as entirely risk free. Therefore, the adverse effects of alcohol are highly unpredictable, and lead to the conclusion that there is no scientific means of identifying what is a “safe” or “sensible” level of alcohol consumption for any one individual. While knowledge of the

precise mechanisms is yet to be fully understood, there is clear evidence for the capacity of alcohol to produce a state of dependence, CNS depression and stimulation, ill effects, and abuse liability. A wide range of genetic, physiological, psychological, environmental, cultural, gender and other factors are known to mediate the dependence potential of alcohol. There is therefore no simple means of identifying individuals definitely at risk, or not at risk, of alcohol dependence. Labelling is a means of delivering a clear message to consumers that alcohol is not an ordinary commodity; for example a message about alcohol and pregnancy; or a message informing young people that alcohol is toxic.

**An objective of consumer policy is to protect consumers effectively from the serious risks and threats that they cannot tackle as individuals**

The background to consumer policy in Europe includes the Commission’s Consumer Protection Policy and the Consumer Aquis, which is currently under review. The Consumer Protection Policy aims to protect consumers effectively from the serious risks and threats that they cannot tackle as individuals. Labelling, although an important market tool which can be considered as a part of communication between authorities, producers and consumers, is not the only route for communicating information to the consumer, and should be considered in the wider context of consumer information and education. Nutrition labelling is currently not compulsory unless a nutrition claim is made. Tobacco labelling is governed by Directive 2001/37/EC in which each unit packet of tobacco products must

carry a general warning and an additional warning taken from the list set out in Annex I to the Directive. For the moment there is no obligation at European level to use colour photographs or other illustrations on tobacco packages to depict and explain the health consequences of smoking; it is up to each Member State to decide, as some are doing. All alcoholic drinks over 1.2% volume are required to state their alcohol content on their label. There is no current EU legislation for labelling, although since 2005, France has introduced legislation to carry warning labels on alcohol containers, with a message that no drinking should take place during pregnancy. In Finland, a new law is to be introduced for warning labels concerning the product's harmfulness to health and a special warning about the hazard to an unborn child. In the United Kingdom, a partnership has been made with the alcohol industry regarding new labelling on alcohol containers and packaging bought or sold in the UK to show the Government's sensible drinking message and possible information on alcohol and pregnancy such as 'Avoid alcohol if pregnant or trying to conceive'. Three quarters of the European Union population (77%) would agree with putting warnings on alcohol bottles, and advertisements, in order to warn pregnant women and drivers of the dangers of drinking alcohol.

**Labelling should be understood as only one measure to inform consumers that alcohol is not an ordinary commodity, within a more general comprehensive approach to reducing the harm done by alcohol**

Labelling must be considered in the more general sense of consumer infor-

mation within the context of merchandising, advertising and marketing, including presentation and display, packaging, promotion, and point of sale, noting that there is not always a clear distinction between product information and the marketing of a product. In the context of marketing, it should be noted that there is an increasing amount of evidence that shows that the volume of advertisements increases the likelihood of young people starting to drink, the amount they drink, and the amount they drink on any one occasion. These findings are similar to the impact of advertising on smoking and eating behaviour. A variety of educational approaches have been used in an attempt to inform consumers and to reduce the harm done by alcohol, including education of younger people in classroom settings and information campaigns using mass media, including the use of drinking guidelines. Many careful systematic reviews have evaluated school based education which aimed to reduce alcohol related harm, and found that classroom based education is not an effective intervention to reduce alcohol related harm. Whilst drinking guidelines have been used in a number of countries, there have been no evaluations that find an impact of these guidelines on alcohol related harm. With regard to alcohol warning labels themselves, various reviews have concluded that there is little evidence that they have measurable effects on drinking behaviours. However, there is evidence that some intervening variables are affected, such as intention to change drinking patterns (in relation to situations of heightened risk such as drinking driving), having conversations about drinking, and willingness to intervene

with others who are seen as hazardous drinkers. The finding of limited impact on behaviour contrasts with evidence from tobacco where there is evidence of impact but this may reflect the nature of the warning labels. Recent research suggests that the introduction of more graphic and larger warnings for cigarettes has impacted on behaviour. However, despite the limited evidence for an impact, consumer protection principles would suggest, that where there is a risk to health in consuming alcoholic beverages, and, in particular, during pregnancy, when taking medication or when driving or operating machinery, consumers should be informed about the risks, noting that alcohol is not an ordinary commodity.

# 1

## Introduction

1.1. CONSUMER LABELLING DEFINED

1.2. METHOD OF PREPARING THE REPORT

1.3. STRUCTURE OF THE REPORT

Alcohol (ethyl alcohol, ethanol) is a chemical solvent that has toxic effects on the body. It is also drug which has psychoactive effects that underlie its capacity to produce alcohol dependence. A great deal is now known about the toxic and pharmacological effects of alcohol that underlie alcohol related harm. Of concern to consumer protection, alcohol is a ubiquitous toxin that can harm almost any system or organ of the body leading to more than 60 different acute and chronic disorders. Alcohol can also exacerbate pre-existing mental and physical disorders, adversely interact with other prescribed and illicit drugs in the body, and contribute to a wide range of social problems. Labelling should be considered in the more general sense of consumer information within the context of merchandising, advertising and marketing, including presentation and display, packaging, promotion, and point of sale, noting that there is not always a clear distinction between product information and the marketing of a product. Further, a label is also not the only way to inform consumers. Packaging, information material and educational approaches are other means. However, labelling is a means of delivering a clear message to consumers that alcohol is not an ordinary commodity; for example a message about alcohol and pregnancy message; or a message informing young people that alcohol is toxic. This report reviews the evidence of the impact of warning labels on consumers' knowledge and behaviour.

Alcohol is not an ordinary commodity (Babor et al. 2003), but rather a ubiquitous toxin that can harm almost any system or organ of the body, exacerbating

pre-existing mental and physical disorders, and adversely interacting with other illicit drugs (Anderson & Baumberg 2006). Following consumption of a given amount, alcohol shows wide individual variation in its toxic effects, with no threshold below which it can be regarded as entirely risk free. Alcohol can produce a state of dependence and depression and stimulation of the central nervous system, with no means of identifying whether or not an individual is at risk, or not at risk, of becoming dependent.

Alcohol is a key health determinant in the European Union, being a cause of some 60 diseases and conditions. It is responsible for 7.4% of all ill-health and premature death in the Union, being the third leading risk factor after high blood pressure and tobacco, and a cause of over 25% of male deaths in the age group 15-29 years (Anderson & Baumberg 2006). Fifty-five million adults drink to hazardous levels and some 100 million Europeans binge-drink (five or more drinks on an occasion) at least once a week. Some 23 million Europeans are dependent on alcohol in any one year. Alcohol-attributable disease, injury and violence is an economic burden to society in the health, welfare, employment and criminal justice sectors, with a total calculated tangible cost to the Union of €125bn in 2003, equivalent to 1.3% of GDP.

Governments have a responsibility for alcohol policy, and government action, which includes taxes, service provision, regulation and information, also brings in benefits, including reduced costs and increased income due to taxes. The most robust evidence for effectiveness in

reducing the harm done by alcohol results from those measures that regulate the marketing of alcohol, including price and taxation, managing the availability of alcohol and regulating commercial communications (Babor et al. 2003; Anderson & Baumberg 2006). Educational type preventive interventions show little evidence of effectiveness across authoritative reviews and are not an alternative to regulating the marketing of alcohol. Although there is limited evidence for the impact of warning labels on alcoholic products in reducing the harm done by alcohol, European consumers can benefit from receiving accurate and consistent information on alcohol in order to help them make informed choices.

### 1.1. CONSUMER LABELLING DEFINED

Article 152 of the Treaty of the European Community states that a high level of human health protection is to be ensured by all Community institutions in the definition and implementation of all Community policies and activities<sup>1</sup>. The Commissions' Consumer Protection Policy<sup>2</sup> aims to protect consumers effectively from the serious risks and threats that they cannot tackle as individuals. This can be achieved through a simple legal framework, better monitoring of the consumer market, improved evidence, better consultation and better representation of consumers' interests, and through ensuring an effective application of the rules notably

through enforcement, cooperation, information, education and redress. Producers have an obligation to provide consumers with the relevant information to enable them to assess the risks inherent in a product, where such risks are not immediately obvious without adequate warnings, and to take precautions against those risks. Adequate consumer protection should result in improved decision making of citizens about their health and consumer interests, and an integration of health and consumer protection interests in all Community policies. Consumers, through better information, should be able to make informed, environmentally and socially responsible choices in full knowledge of the facts.

Labelling is viewed as an important market tool being an integral part of communication between societal players (for example, producers to consumers, directly and via intermediaries, and authorities to consumers). Labelling must be considered in the more general sense of consumer information within the context of merchandising, advertising and marketing, including presentation and display, packaging, promotion, and point of sale, noting that there is not always a clear distinction between product information and the marketing of a product. Further, a label is also not the only way to inform consumers. Packaging, information material and educational approaches are other means. However, labelling is a means of delivering a clear message to consumers that alcohol is not an ordinary commodity; for example a message about alcohol and pregnancy message; or a message informing young people that alcohol is toxic. Warning labels have been

---

1 [http://europa.eu.int/eur-lex/en/treaties/dat/C\\_2002325EN.003301.html](http://europa.eu.int/eur-lex/en/treaties/dat/C_2002325EN.003301.html)

2 [http://ec.europa.eu/consumers/overview/cons\\_policy/doc/EN\\_99.pdf](http://ec.europa.eu/consumers/overview/cons_policy/doc/EN_99.pdf)

defined as “Messages printed on alcoholic beverage containers warning drinkers about the harmful effects of alcohol on health”. (Babor *et al.* 2003)

## 1.2. METHOD OF PREPARING THE REPORT

This report is not meant to be a series of new meta-analyses<sup>3</sup> or systematic reviews<sup>4</sup>, but rather a comprehensive review based on systematic searches for published reviews, systematic reviews, meta-analyses and individual papers. To begin with, source materials were identified from Anderson & Baumberg (2006), Anderson (2007), and Stockwell (2006) with additional source material to update the evidence base identified through literature searches using PubMed<sup>5</sup>, MEDLINE<sup>6</sup>, and PsychINFO<sup>7</sup>, with the following search terms:

Alcohol + warning labels  
Alcohol + health messages  
Alcohol + warning labels + pregnancy  
Alcohol + health messages + pregnancy  
Alcohol drinking + warning labels  
Alcohol drinking + health messages  
Alcohol drinking + warning labels + pregnancy  
Alcohol drinking + health messages + pregnancy  
Alcohol industry + warning labels  
Alcohol industry + health messages

The titles and abstracts for the references identified with the search strategy were screened for relevance for the report, and obtained and classified under each of the chapter titles of the report. This report is dependent on the available published literature, which is not always representative of all countries, cultures and population groups.

Although the literature base is growing throughout Europe (Sanchez-Carbonell *et al.* 2005), it is still heavily dominated by North American literature.

The report has followed the definitions of evidence-based medicine modified for the purpose of alcohol policy. This can be defined as ‘the conscientious, explicit and judicious use of current best evidence in informing decisions about alcohol policy’ through an approach that promotes the collection, interpretation, and integration of valid, important and applicable research-derived evidence that can support alcohol policy. In adopting an evidence-based approach, it is relevant to note the importance of doing this pragmatically and realistically. As Gray (Gray 2001) states, ‘*The absence of excellent evidence does not make evidence-based decision making impossible; what is required is the best evidence available, not the best evidence possible.*’

---

3 A meta-analysis is the use of statistical techniques in a systematic review to integrate the results of included studies. Sometimes misused as a synonym for systematic reviews, where the review includes a meta-analysis. Glossary of Terms in the Cochrane Collaboration (2005).

4 A systematic review is a review of a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyse data from the studies that are included in the review. Statistical methods (metaanalysis) may or may not be used to analyse and summarise the results of the included studies. Glossary of Terms in the Cochrane Collaboration (2005).

5 <http://www.pubmedcentral.nih.gov/>.

6 <http://medline.cos.com/>.

7 <http://www.psycinfo.com/>.

### 1.3. STRUCTURE OF THE REPORT

Chapter 2 of the report will briefly describe the evidence that alcohol is a toxic and dependence producing substance.

Chapter 3 will provide a background of consumer protection policy in Europe, and describe current regulations and recommendations as they pertain to food-stuffs, tobacco and alcohol, with a brief summary of the public support for warning labels for alcohol.

Chapter 4 will discuss consumer information and alcohol policy, recognizing that labelling should be understood as only one measure within a more general comprehensive approach to reducing the harm done by alcohol. The chapter will briefly review the evidence of the impact of marketing and education on alcohol consumption and the harm done by alcohol, and describe in more detail the limited available evidence of the impact of warning labels. The chapter will conclude with the view that, despite the limited evidence for an impact, consumer protection principles would suggest, that where there is a risk to health in consuming alcoholic beverages, and, in particular, during pregnancy, when taking medication or when driving or operating machinery, labelling is a means of delivering a clear message to consumers about the risks and that alcohol is no ordinary commodity.

Chapter 5 will provide some conclusions and recommendations.



# Alcohol as a toxic and dependence producing substance

# 2

2.1. ALCOHOL INTOXICATION

2.2. TOXIC EFFECTS OF ALCOHOL

2.3. DEPENDENCE ON ALCOHOL

2.4. ALCOHOL'S BURDEN IN EUROPE

2.5. CONCLUSIONS

Alcohol (ethyl alcohol, ethanol) is a chemical solvent that has toxic effects on the body. It is also drug which has psychoactive effects that underlie its capacity to produce alcohol dependence. Alcohol can also exacerbate preexisting mental and physical disorders, adversely interact with other prescribed and illicit drugs in the body, and contribute to a wide range of social problems. Alcohol is a carcinogen (cancer causing agent) for a wide range of cancers and is toxic to the liver and cardiovascular and immune systems. Alcohol is also teratogenic, being toxic to the foetus, where there is no evidence for a safe level of alcohol consumption. Alcohol is an intoxicant, leading to a wide range of adverse effects including risk taking behaviour (such as unprotected sexual activity), accidents and injuries (also while driving vehicles or operating machinery), violence, and acute alcohol poisoning that also pose a significant risk to third parties. There is wide individual variation in the toxic effects of consuming a given amount of alcohol. Further the effects of alcohol show no threshold below which alcohol can be regarded as entirely risk free. Therefore, the adverse effects of alcohol are

highly unpredictable, and lead to the conclusion that there is no scientific means of identifying what is a “safe” or “sensible” level of alcohol consumption for any one individual. While knowledge of the precise mechanisms is yet to be fully understood, there is clear evidence for the capacity of alcohol to produce a state of dependence, CNS depression and stimulation, ill effects, and abuse liability. A wide range of genetic, physiological, psychological, environmental, cultural, gender and other factors are known to mediate the dependence potential of alcohol. There is therefore no simple means of identifying individuals definitely at risk, or not at risk, of alcohol dependence.

Alcohol is a toxic substance that can harm almost any system or organ of the body, and is related to more than 60 different disorders with short and long term consequences (Rehm et al. 2004). For many conditions there is an increasing risk with increasing levels of alcohol consumption, with no evidence of a threshold effect below which it can be regarded as entirely risk free (see Figure 1). Alcohol can exacerbate pre-existing

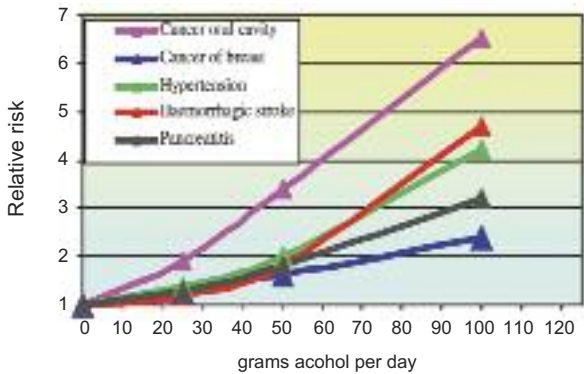


Figure 1. Relative risk of a range of conditions in relation to average alcohol consumption (g/day, where 10g is approximately one drink). Source: Corrao et al. (2004).

mental and physical disorders and can adversely interact with other prescribed and illicit drugs in the body (World Health Organization 2007).

## 2.1. ALCOHOL INTOXICATION

Alcohol use is associated with **crime and domestic violence** in all European countries, and is particularly involved with violent crimes (Anderson & Baumberg 2006). Episodic heavy drinking, frequency of drinking and drinking volume are all independently associated with the risk of violence, with frequency of drinking appearing to be the most important. Generally, the higher the level of alcohol consumption, the more serious the violence. It should be borne in mind that the links to alcohol show how far alcohol is *associated* with violence, which may be greater than its *causal* role.

Parental drinking can affect the environment in which a child grows up through

financial strain, poor parenting, marital conflicts and negative role models. A variety of childhood mental and behavioural disorders are more prevalent among children of heavy drinkers than others, and there is a higher risk of **child abuse** in families with heavy drinking parents, with the estimate that alcohol is a cause of child abuse in 16% of cases. Five to nine million European children (6%-12% of all children) are living in families adversely affected by alcohol (Anderson & Baumberg 2006).

**Injury** is mainly linked to acute drinking and intoxication. Causal relationships between alcohol and almost all kinds of unintentional as well as intentional injuries have been established. There is a clear dose-response relationship: the higher the level of blood alcohol in the body, the higher the risk for injury. Both the frequency of drinking, and the amount drunk per occasion increase the risk of fatal injury (Figure 2).

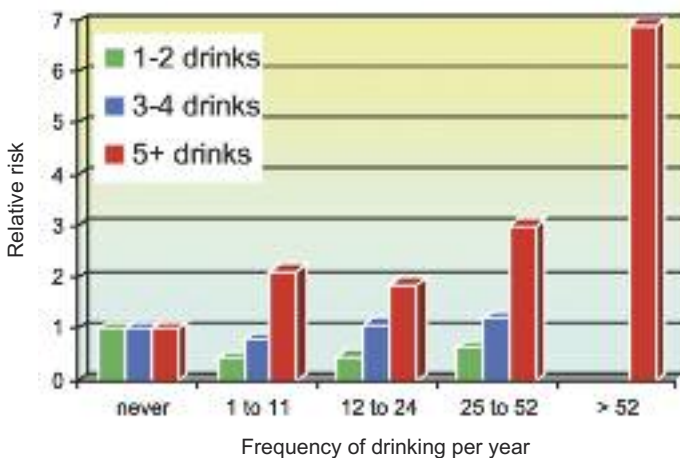


Figure 2. Relative risk of a fatal injury amongst Finnish men by frequency of drinking per year, and number of drinks per drinking occasion. Source: Paljärvi et al. (2005).

Over 2,000 homicide deaths per year are attributable to alcohol use, 4 of every 10 homicides that occur in the European Union (Anderson & Baumberg 2006). Homicide rates in a country change with changes in alcohol consumption. Although the effect per litre change in alcohol consumption has been greater in northern Europe, the higher consumption levels in southern Europe mean

that the overall estimated number of homicides caused by alcohol is estimated to be similar in northern and southern Europe (Rossow 2001). Thus, the estimated share of all homicides that are due to alcohol is slightly higher in southern Europe (61% of all homicides) than in northern Europe (50% of all homicides), Figure 3.

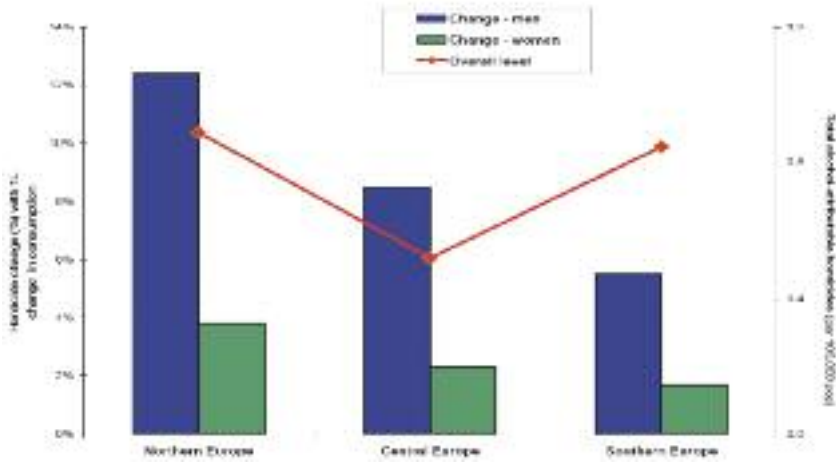


Figure 3. Homicides and alcohol in northern, central and southern Europe. Left axis, homicide change (%) with 1 l change in per capita alcohol consumption; right axis, total alcohol caused homicides per 100,000 population. Source: Rossow 2001

**Drink driving accidents** affect not only the drinker, but also those surrounding the drinker, including other passengers in the car of the drink driver, passengers in other cars, and pedestrians. Out of the total 17,000 drink driving deaths each year, it is estimated that 10,000 (three fifths) are due to someone other than the drink driver (Anderson & Baumberg 2006).

### 2.2. TOXIC EFFECTS OF ALCOHOL

Many neuropsychiatric disorders are associated with alcohol consumption as

well as with alcohol use disorders, (alcohol dependence and harmful use of alcohol). Alcohol may cause or exacerbate disorders such as depression, anxiety disorders, panic disorders or other substance use disorders, but on the other hand, such disorders may also lead to increased drinking (Rehm et al. 2004). Also, other factors such as genetic disposition may be related to both alcohol use disorders and related mental disorders. Alcohol consumption has both immediate and long-term effects on the brain and neuropsychological functioning. Brain development is a

highly regulated process under tight temporal and spatial constraints, with each brain region having its own unique timetable for development. Alcohol selectively exerts its effects at the cellular and molecular levels on all of these developmental processes. Adolescents and young people are particularly vulnerable to the adverse effects of alcohol. During adolescence, alcohol can lead to structural changes in the hippocampus (a part of the brain involved in the learning process) and at high levels can permanently impair brain development (Faden & Goldman, Eds. 2005). There is a relationship between lifetime alcohol use and the volume of brain grey matter (regions of the brain involved in muscle control, sensory perceptions, such as seeing and hearing, memory, emotions and speech), with increasing alcohol consumption related to decreasing volume of grey matter in a dose dependent manner (Taki et al. 2006).

Alcohol increases the risk of **liver cirrhosis**. The relationship between alcohol consumption and liver cirrhosis follows an exponential curve, with relatively less risk increases for smaller amounts of consumption, and huge increases for larger average amounts of consumption (Anderson & Baumberg 2006). Repeated alcohol use exposes the liver to hypoxia, harmful products of alcohol metabolism, reactive oxygen chemicals, and protein adducts, all of which lead to liver damage and an increased risk of cirrhosis of the liver.

Alcohol increases the risk of a wide range of cancers (Corrao et al. 2004). There are significantly elevated risks even for drinking on average 25g pure alcohol per day for cancers of the oral cavity and

pharynx, oesophagus, stomach, colon and rectum, liver, larynx, and female breast. Overall, the relationship between volume and relative risk of cancer is linear, meaning the increases of volume of drinking are associated with steady increases of relative risk in comparison to not drinking. Several mechanisms have been identified for alcohol-associated carcinogenesis, including acetaldehyde formation, induction of CYP2E1 leading to formation of reactive oxygen species and enhanced pro-carcinogen activation, and modulation of cellular regeneration.

Alcohol has a variety of causal relations to **cardiovascular disease** (Anderson & Baumberg 2006). Both average volume of consumption and patterns of drinking determine the extent of these relationships, as well as whether alcohol has a protective or detrimental impact. For hemorrhagic stroke and blood pressure, the relationships are detrimental, with clear dose response relationships. For ischaemic stroke and ischaemic heart disease, a pattern of low and regular consumption has been associated with protective effects, where as heavy consumption has a detrimental impact. Alcohol consumption raises levels of high density lipoprotein cholesterol (HDL), which removes fatty deposits in blood vessels and thus is associated with a lower risk of coronary heart disease deaths. Alcohol also favourably affects blood clotting profiles, reducing the risk of heart disease. However, alcohol also has adverse effects, with consumption, and episodic heavy drinking, increasing the risk of calcification of the coronary arteries in young adults in a dose dependent manner. In addition, alcohol can cause cardiac arrhythmia and

muscle damage leading to cardiomyopathy and ultimately, heart failure.

Alcohol can increase the risk of **communicable diseases** in two ways: first, alcohol leads to a weakening of the immune system and thus may increase the risk for communicable diseases such as Tuberculosis, HIV/AIDS or different forms of hepatitis; second, there is another indirect link via alcohol leading to a higher risk of unsafe sex thereby increasing the risk of sexually transmittable infectious diseases (World Health Organization 2007).

Alcohol is a **teratogen**, affecting the developing baby (Gunzerath et al. 2004). The most serious consequence of drinking during pregnancy is foetal alcohol syndrome (FAS), a devastating developmental disorder characterized by craniofacial abnormalities, growth retardation, and nervous system impairments that may include mental disability. But, even at low average volumes of consumption, and particularly during the first trimester

of pregnancy alcohol can increase the risk of spontaneous abortion, low birth weight, prematurity and intra-uterine growth retardation. Some 60,000 low birth weight babies are estimated to be due to alcohol each year in Europe (Anderson & Baumberg 2006).

### 2.3. DEPENDENCE ON ALCOHOL

No matter how drinking is measured, the risk of **alcohol dependence** increases with both the volume of alcohol consumption and a pattern of drinking larger amounts on an occasion, Figure 4 (Caetano and Cunradi 2002). The association between alcohol consumption and dependence should not be seen as flowing in one direction only, i.e. from drinking to alcohol dependence. One of the characteristics of alcohol dependence is self-perpetuation. Once installed, dependence itself influences both the pattern and volume of alcohol consumption, which in turn leads to the maintenance of dependence.

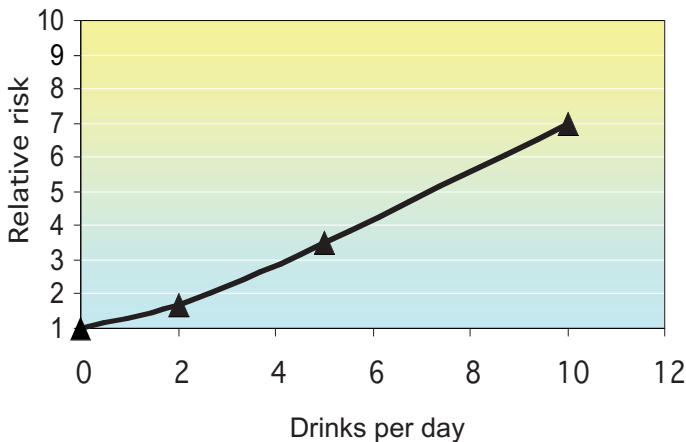


Figure 4. Relative risk of alcohol dependence in relation to average alcohol consumption (drinks/day, where one drink is approximately 10g alcohol). Source: Caetano and Cunradi (2002).

The two factors that contribute to the development of alcohol dependence are psychological reinforcement and biological adaptation within the brain (World Health Organization 2004). The pleasurable, rewarding effects of alcohol underlie its ability to act as a reinforcer leading to alcohol self-administration through operant conditioning. The core neural pathway believed to be the basis of this reinforcement is the mesolimbic dopaminergic pathway from the ventral tegmental area to the nucleus accumbens of the ventral striatum (Wise 2004). Alcohol shares this reinforcement mechanism with other psychoactive drugs such as cocaine and heroin. Alcohol is also believed to achieve some of its rewarding effects through the endogenous opioid system. The direct actions of alcohol on the brain and repeated alcohol exposure lead to longer term molecular changes in the brain known as neuro-adaptation. In many different brain receptors, neuro-adaptation counteracts or reverses the acute actions of alcohol. Upon removal of alcohol, the adapted system overcompensates in the direction of excitation, resulting in withdrawal symptoms such as hyperexcitability, anxiety, and even seizures. The neuro-adaptation that occurs with repeated alcohol exposure provides the basis for tolerance and dependence. Tolerance contributes to the development of alcohol dependence and harm. Tolerance facilitates increased intake of alcohol by diminishing the aversive responses to alcohol and the physically incapacitating actions of alcohol such as sedation and locomotor impairment. Tolerance also reduces the positive, pleasurable effects of alcohol. The resulting increase in alcohol consumption can promote alcohol dependence.

## 2.4. ALCOHOL'S BURDEN IN EUROPE

One way to assess the overall scale of alcohol as a public health problem is to examine the whole burden of illness and disease, looking at years of healthy life. The WHO uses a measure called Disability-Adjusted Life Years (DALYs) to estimate the number of healthy years of life lost due to each risk factor. DALYs measure a gap in health between the current position and what could be achieved (Murray et al. 2002). Alcohol is responsible for the loss of over 4.5 million DALYs every year in the EU (7.4% of all DALYs). This is principally for men, accounting for 12% of all male ill-health and premature death and a smaller but still sizeable 2% of all female ill-health and premature death. The larger proportion of the burden arises from alcohol-related neuropsychiatric conditions and accidents Figure 5. This makes alcohol the third leading risk factor for death and disability in the European Union, ahead of obesity/overweight and nearly four times that of illicit drugs. Only blood pressure and tobacco account for a greater morbidity toll, Figure 6.

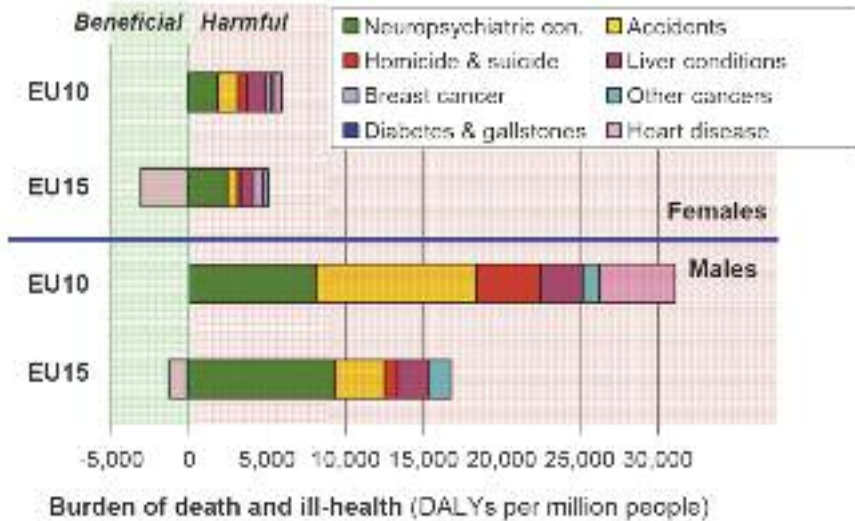


Figure 5. Alcohol-attributable burden of death and ill-health in the European Union. Source: Anderson & Baumberg (2006) adapted from Rehm et al. (2004).

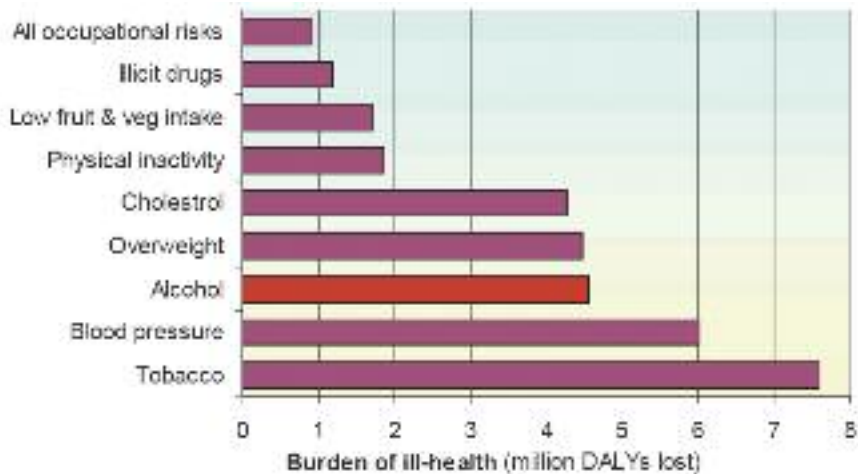
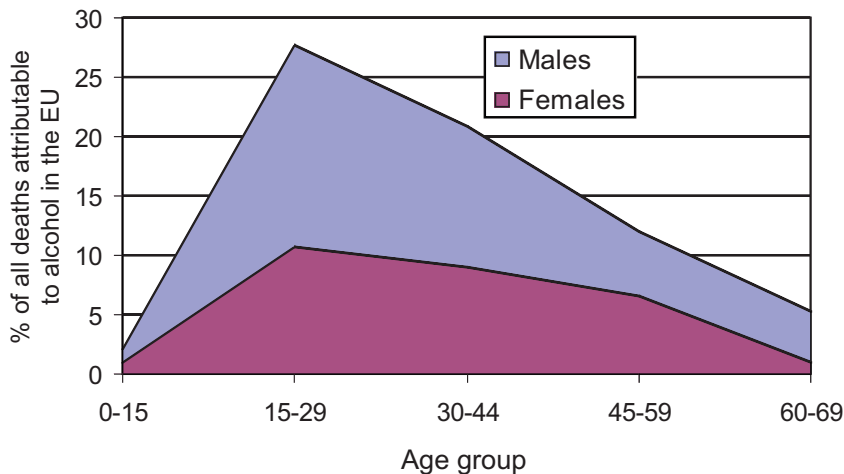


Figure 6. Top 9 risk factors for ill-health in the European Union. Source: Anderson & Baumberg (2006) adapted from Rehm et al. (2004).

Young people shoulder a disproportionate amount of the health burden due to alcohol, with 28% of youth male mor-

tality and 11% of youth female mortality being due to alcohol, Figure 7.



**Figure 7.** The share of deaths attributable to alcohol in EU citizens younger than age 70 years (year 2000). Source: Rehm (2005)

Between countries, alcohol plays a considerable role in the lowered life expectancy in the newer Member States, compared with the older, with the alcohol-attributable gap in crude death rates estimated at 90 (men) and 60 (women) per 100,000 population (Anderson & Baumberg 2006). Within countries, many of the conditions underlying health inequalities are associated with alcohol, although the exact condition may vary (e.g. cirrhosis in France, violent deaths in Finland, Kunst *et al.* (1998)). Worse health in deprived areas also appears to be linked to alcohol, with research suggesting that directly alcohol-attributable mortality is worse in deprived areas beyond that which can be explained by individual-level inequalities (Blomgren *et al.* 2004).

## 2.5. CONCLUSIONS

Alcohol has toxic effects on the human body, being a carcinogen and teratogen, as well as being toxic to the brain and a wide variety of organs. Although in small doses, alcohol can be cardioprotective, in higher doses, it is cardiotoxic. Alcohol's toxic effects result from both lifetime exposure as well from acute raised blood levels. The importance of alcohol as a toxic agent can be gained from its contribution to ill health and premature death, where it is the third most important risk factor in the European Union, after raised blood pressure and tobacco use. Labelling can be seen as a means of delivering a clear message to consumers that alcohol is not an ordinary commodity; for example a message about alcohol and pregnancy; or a message informing young people that alcohol is a toxic substance.



# 3

## Consumer protection in Europe

- 3.1. CONSUMER POLICY IN EUROPE
- 3.2. LABELLING AND PACKAGING IN EUROPE
- 3.3. LABELLING AND PACKAGING OF ALCOHOLIC DRINKS  
IN EUROPE
- 3.4. PUBLIC SUPPORT FOR WARNING LABELS IN EUROPE
- 3.5. CONCLUSIONS

The background to consumer policy in Europe includes the Commission's Consumer Protection Policy and the Consumer Aquis, which is currently under review. The Consumer Protection Policy aims to protect consumers effectively from the serious risks and threats that they cannot tackle as individuals. Labelling, although an important market tool which can be considered as a part of communication between authorities, producers and consumers, is not the only route for communicating information to the consumer, and should be considered in the wider context of consumer information and education. Nutrition labelling is currently not compulsory unless a nutrition claim is made. Tobacco labelling is governed by Directive 2001/37/EC in which each unit packet of tobacco products must carry a general warning and an additional warning taken from the list set out in Annex I to the Directive. For the moment there is no obligation at European level to use colour photographs or other illustrations on tobacco packages to depict and explain the health consequences of smoking; it is up to each Member State to decide, as some are doing. All alcoholic drinks over 1.2% volume are required to state their alcohol content on their label. There is no current EU legislation for labelling, although since 2005, France has introduced legislation to carry warning labels on alcohol containers, with a message that no drinking should take place during pregnancy. In Finland, a new law is to be introduced for warning labels concerning the product's harmfulness to health and a special warning about the hazard to an unborn child. In the United Kingdom, a partnership has been made with the alcohol industry regarding new labelling on alcohol contain-

ers and packaging bought or sold in the UK to show the Government's sensible drinking message and possible information on alcohol and pregnancy such as 'Avoid alcohol if pregnant or trying to conceive'. Three quarters of the European Union population (77%) would agree with putting warnings on alcohol bottles, and advertisements, in order to warn pregnant women and drivers of the dangers of drinking alcohol.

### 3.1 CONSUMER POLICY IN EUROPE

The background to consumer policy in Europe includes the Commission's Consumer Protection Policy<sup>8</sup> and the Consumer Aquis, which is currently under review<sup>9</sup>. One of the objectives of the Consumer Protection Policy is to protect consumers effectively from the serious risks and threats that they cannot tackle as individuals. The Policy proposes that this can be achieved through a simple legal framework, better monitoring of the consumer market, improved evidence, better consultation and better representation of consumers' interests, and through ensuring an effective application of the rules notably through enforcement, cooperation, information, education and redress. The Directive on general product safety requires producers themselves to provide consumers with the relevant information to enable them to assess the risks inherent in a product, where such risks are not immediately obvious without adequate war-

---

8 [http://ec.europa.eu/consumers/overview/cons\\_policy/EN\\_2099.pdf](http://ec.europa.eu/consumers/overview/cons_policy/EN_2099.pdf)

9 [http://ec.europa.eu/consumers/cons\\_int/safe\\_shop/acquis/green-paper\\_cons\\_acquis\\_en.pdf](http://ec.europa.eu/consumers/cons_int/safe_shop/acquis/green-paper_cons_acquis_en.pdf)

nings, and to take precautions against those risks<sup>10</sup>. Adequate consumer protection should result in improved decision-making of citizens about their health and consumer interests, and an integration of health and consumer protection interests in all Community policies. Consumers, through better information, should be able to make informed, environmentally and socially responsible choices in full knowledge of the facts.

### 3.2 LABELLING AND PACKAGING IN EUROPE

Labelling is an important market tool which can be considered as a part of communication between authorities, producers and consumers<sup>11</sup>. Although not the only route for communicating information to the consumer, it remains an effective tool. For the consumer, labelling provides the means for authorities and producers to pass on essential information about products such as use-by dates and safety warnings, as well as important information such as content labelling, and for containers, recycling details. As such, the label has the role of allowing the consumer to make an informed choice at the point of sale about whether to purchase a product and, if they do so, to consider how best it should be used. However, consumer use of labels can be inconsistent and the effectiveness of labelling as a communication tool can be questioned because if the consumer is interested in a label, using labels can be difficult as they may contain too much information, much of which may not be understood, may be confusing and may be poorly presented. To improve this situation, consideration must be given to what the consumer

needs from the label, how to make the most efficient label for the stated purpose, and the effective empowerment of the consumer as the receiver of the message of communication, including education and understanding.

Labelling should also be considered in the wider context of consumer information. Labelling came to be an important regulatory tool because, before the development of an information society (internet, free phone numbers), it was the common way to ensure information reached the consumers. Consumer choices were also focused on the point of sale. Markets, products and consumer expectations and information gathering habits have, however, become considerably more complex and ways to communicate information to consumers more sophisticated.

#### Food labelling

General food labelling is governed by Directive 2000/13/EC<sup>12</sup>, which is a codified version of Directive 79/112/EC<sup>13</sup>. Although a major amendment was introduced in 2003 (labelling of allergenic ingredients), most of the provisions date back to 1978. The presentation and advertising of foodstuffs has been governed by Council Directive 84/450/EEC of 10 September 1984 on the approximation of the laws, regulations and administrative provisions of the Member States

10 [http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/l\\_011/l\\_01120020115en00040017.pdf](http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/l_011/l_01120020115en00040017.pdf)

11 [http://ec.europa.eu/food/food/labellingnutrition/betterregulation/competitiveness\\_consumer\\_info.pdf](http://ec.europa.eu/food/food/labellingnutrition/betterregulation/competitiveness_consumer_info.pdf)

12 [http://www.fsai.ie/legislation/food/eu\\_docs/Labelling/General%20Labelling%20Provisions%20for%20Foodstuffs/Dir%202000.13%20EC.pdf](http://www.fsai.ie/legislation/food/eu_docs/Labelling/General%20Labelling%20Provisions%20for%20Foodstuffs/Dir%202000.13%20EC.pdf)

13 [http://ue.eu.int/ueDocs/cms\\_Data/docs/pressData/en/lsa/017a0005.htm](http://ue.eu.int/ueDocs/cms_Data/docs/pressData/en/lsa/017a0005.htm)

concerning misleading and comparative advertising, consolidated in 1997<sup>14</sup>, with the business to consumer rules to be replaced by the unfair commercial practices Directive to be implemented in member States by the end of 2007<sup>15</sup>.

Food safety requirements state that food shall not be placed on the market if it is unsafe, that food shall be deemed to be unsafe if it is considered to be injurious to health or unfit for human consumption<sup>16</sup>. In determining whether any food is unsafe, regard shall be had to the normal conditions of use of the food by the consumer and at each stage of production, processing and distribution, and to the information provided to the consumer, including information on the label, or other information generally available to the consumer concerning the avoidance of specific adverse health effects from a particular food or category of foods. In determining whether any food is injurious to health, regard shall be had not only to the probable immediate and/or short-term and/or long-term effects of that food on the health of a person consuming it, but also on subsequent generations.

The labelling Directive states that the labelling, presentation and advertising of foodstuffs must not mislead the consumer as to the foodstuff's characteristics or effects; attribute to a foodstuff properties for the prevention, treatment or cure of a human illness, except for natural mineral waters and foodstuffs intended for special diets, which are covered by specific Community provisions. Nutrition labelling is currently not compulsory unless a nutrition claim is made<sup>17</sup>. Where this is so, nutrition labelling becomes mandatory and two types of nu-

trition label content are permitted: group 1 – energy value, amounts of protein, carbohydrate and fat (the so-called 'Big 4') and group 2 – energy value, amounts of protein, carbohydrate, sugars, fats, saturates, fibre and sodium (the 'Big 8'). The Directive also mandates the measurement units and format that must be used.

### **Tobacco labelling**

Tobacco labelling is governed by Directive 2001/37/EC on the approximation of the laws, regulations and administrative provisions of the Member States concerning the manufacture, presentation and sale of tobacco products in which each unit packet of tobacco products, except for tobacco for oral use and other smokeless tobacco products, and any outside packaging, with the exception of additional transparent wrappers, must carry a general warning and an additional warning taken from the list set out in Annex I to the Directive<sup>18</sup>.

---

14 [http://europa.eu.int/eur-lex/en/consleg/pdf/1984/en\\_1984L0450\\_do\\_001.pdf](http://europa.eu.int/eur-lex/en/consleg/pdf/1984/en_1984L0450_do_001.pdf)

15 [http://europa.eu.int/eurlex/lex/LexUriServ/site/en/oj/2005/l\\_149/l\\_14920050611en00220039.pdf](http://europa.eu.int/eurlex/lex/LexUriServ/site/en/oj/2005/l_149/l_14920050611en00220039.pdf)

16 [http://eur-lex.europa.eu/LexUriServ/site/en/oj/2002/l\\_031/l\\_03120020201en00010024.pdf](http://eur-lex.europa.eu/LexUriServ/site/en/oj/2002/l_031/l_03120020201en00010024.pdf)

17 Council Directive 90/496/EC - [http://eurlex.europa.eu/smartapi/cgi/sga\\_doc?smartapi!cele-xapi!prod!CELEXnumdoc&lg=EN&numdoc=31990L0496&model=guichett](http://eurlex.europa.eu/smartapi/cgi/sga_doc?smartapi!cele-xapi!prod!CELEXnumdoc&lg=EN&numdoc=31990L0496&model=guichett), amended by Commission Directive 2003/120/EC, [http://eurlex.europa.eu/pri/en/oj/dat/2003/l\\_333/l\\_3332003120en00510051.pdf](http://eurlex.europa.eu/pri/en/oj/dat/2003/l_333/l_3332003120en00510051.pdf)

18 [http://europa.eu.int/eur-lex/pri/en/oj/dat/2001/l\\_194/l\\_19420010718en00260034.pdf](http://europa.eu.int/eur-lex/pri/en/oj/dat/2001/l_194/l_19420010718en00260034.pdf)



Member States can decide whether health warnings in the form of colour photographs or other illustrations are required in combination with the additional warnings, and, if so, they must draw on a library of selected source documents containing combined warnings, which have been supplied by electronic means to the Member States.

### 3.3 LABELLING AND PACKAGING OF ALCOHOLIC DRINKS IN EUROPE

Wines and spirits traded within the EU internal market have to conform to a number of technical regulations, relating to both their labels and their packaging more generally. Probably the greatest amount of regulation on labelling is dedicated to protecting producers' rights to use certain names when describing their drinks, a concern that also links to the TRIPS agreement on intellectual property in the World Trade Organization. The key legislation for

spirits in this regard is a 1989 Regulation on the definition, description and presentations of spirits (EEC 1576/89), which sets out the conditions necessary for a drink to be described as 'whisky', 'rum' etc<sup>19</sup>. This includes a minimum alcoholic strength for each type of drink, generally set at 37.5% alcohol concentration (although there is some variation; whisky, for example, must be 40% concentration or greater), and also specifies the size that this is displayed on the label.

Legislation for wine is both more complicated and more controversial, with Regulation 753/2002 subject to considerable US pressure over protection for geographical indicators, resulting in the more recent Regulation 316/2004<sup>20</sup>.

<sup>19</sup> [http://www.wipo.int/clea/docs\\_new/en/gr/groz9en.html](http://www.wipo.int/clea/docs_new/en/gr/groz9en.html)

<sup>20</sup> [http://eurlex.europa.eu/smartapi/cgi/sga\\_doc?smartapi!celexplus!prod!DocNumber&type\\_doc=Regulation&an\\_doc=2004&nu\\_doc=316&lg=en](http://eurlex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexplus!prod!DocNumber&type_doc=Regulation&an_doc=2004&nu_doc=316&lg=en)

Wine labels must include a set of compulsory information within a single field of vision (i.e. visible without turning the bottle), including alcoholic strength (with a specified minimum text size, as for spirits), country of origin (for imports), production lot and other details.

More generally, all alcoholic drinks over 1.2% volume are required to state their alcohol content on their label (Directive 2000/13/EC Article 3.10)<sup>21</sup>. Amendments to the same Directive also require all products containing certain allergens to list these on the label (Directive 2003/89/EC<sup>22</sup>). In addition, wine and spirits must indicate “contain sulphites” since November 2004. Directive 2005/26/EC allows further research to see if some other ingredients are (or are not) to be considered allergenic.

Beyond labelling, EU law specifies common sizes for pre-packaged alcoholic drinks, which must be accepted for intra-Community trade by all EU countries (Directive 75/106/EEC). The specified sizes are the only allowable ones for wine and spirits, but Member States are allowed to use other sizes within their national markets for beer<sup>23</sup>. Originally the harmonization was motivated by consumer protection, but more recent legislation on unit pricing, misleading advertising and labelling requirements have made this redundant. Nevertheless, a Commission proposal to replace this legislation (COM (2004) 708 final) recommended keeping similar fixed sizes for wine and spirits to help smaller producers<sup>24</sup>. The Commission proposed that these fixed sizes should only be kept for 20 years to allow smaller producers time to adapt, after which the wine and spirits market would revert to free sizes.

In 2005, France recently introduced legislation to carry warning labels on alcohol containers, with a message that no drinking should take place during pregnancy. In Finland, a new law is to be introduced stating that the producer, importer or distributor of an alcoholic beverage or some other practitioner, who brings an alcoholic beverage to the market and for use in Finland shall see to it that the packaging is provided with a general warning in Finnish or in Swedish concerning the product’s harmfulness to health and a special warning about the hazard to an unborn child.



**French motif: Consumption of alcoholic beverages during pregnancy even in small amounts can seriously damage the child's health**

---

21 [http://www.fsai.ie/legislation/food/eu\\_docs/Labelling/General%20Labelling%20Provisions%20of%20Foodstuffs/Dir%202000.13%20EC.pdf](http://www.fsai.ie/legislation/food/eu_docs/Labelling/General%20Labelling%20Provisions%20of%20Foodstuffs/Dir%202000.13%20EC.pdf)

22 [http://www.fsai.ie/legislation/food/eu\\_docs/Labelling/General%20Labelling%20Provisions%20for%20Foodstuffs/Dir2003.89.pdf](http://www.fsai.ie/legislation/food/eu_docs/Labelling/General%20Labelling%20Provisions%20for%20Foodstuffs/Dir2003.89.pdf)

23 [http://ec.europa.eu/eur-lex/en/consleg/main/1975/en\\_1975Lo106\\_index.html](http://ec.europa.eu/eur-lex/en/consleg/main/1975/en_1975Lo106_index.html) for details on the newly proposed sizes see COM (2004) 708 final.

24 See also “Pack sizes in the EU: Report on the extended impact assessment of sectors asking for fixed sizes” available from [http://ec.europa.eu/comm/enterprise/prepack/packsizes/packsiz\\_en.htm](http://ec.europa.eu/comm/enterprise/prepack/packsizes/packsiz_en.htm).

In the United Kingdom, an agreement has been reached with the alcohol industry regarding new labelling on alcohol containers and packaging bought or sold in the UK (Department of Health 2007). The new labelling will show the Government's sensible drinking message (SDM) and the alcohol unit content of containers and (for wine and spirits, where practicable) of standard glasses. The Government hopes that the majority of product labels will carry the SDM towards the end of 2008. There are ongoing discussions with the industry regarding the inclusion of messages that encourage sensible drinking at point of sale and on advertising. Labels may include the drink's unit content – for beer, wine and spirits, this will be given per glass and per bottle; the recommended Government safe drinking guidelines: 'UK Chief Medical Officers recommend men do not regularly exceed 3–4 units daily and women 2–3 units daily'; information on alcohol and pregnancy: 'Avoid alcohol if pregnant or trying to conceive'; a sensible drinking message such as 'Know your limits'; and the website address or logo of the Drinkaware Trust (an industry funded information body).

### 3.4 PUBLIC SUPPORT FOR WARNING LABELS IN EUROPE

The Commission's Communication on alcohol, states that the Commission will explore, in cooperation with Member States and stakeholders, the usefulness of developing efficient common approaches throughout the Community to provide adequate consumer information, recognizing the introduction of warning labels by some Member States<sup>25</sup>.

Three quarters of the European Union population (77%) would agree with putting warnings on alcohol bottles, and advertisements, in order to warn pregnant women and drivers of the dangers of drinking alcohol. In all countries surveyed, the majority of respondents would support such a concept, with lowest support in Finland (45%), Denmark (41%) and the Netherlands (38%), Figure 8.

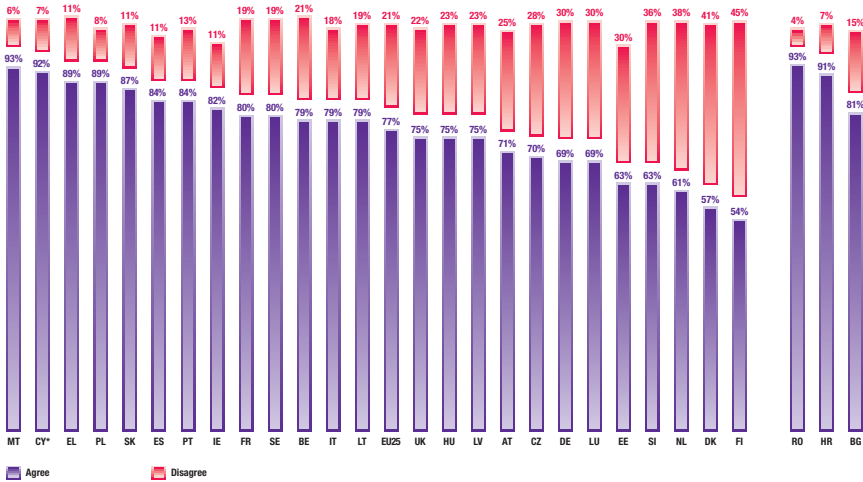
Seventy five per cent of alcohol consumers and 72% of those considering the protection from alcohol related harm to be the responsibility of individuals supported warnings on bottles and advertisements, compared with 83% of those not having drunk alcohol in the past 12 months, and 84% of those who think public authorities have to intervene to protect individuals from alcohol-related harm.

### 3.5 CONCLUSIONS

Labelling is an important information tool which can be considered as a part of communication between authorities, producers and consumers. It is not the only route for communicating information to the consumer, and should be considered in the wider context of

---

25 [http://ec.europa.eu/health/ph\\_determinants/life\\_style/alcohol/alcohol\\_com\\_en.htm](http://ec.europa.eu/health/ph_determinants/life_style/alcohol/alcohol_com_en.htm).



**Figure 8** Would you agree or disagree to put warnings on alcohol bottles and adverts with the purpose to warn pregnant women and drivers of dangers of drinking alcohol? Source: Eurobarometer (2007).

consumer information. With regard to tobacco, there is a Europe wide Directive which stipulates that warning labels must carry a general warning and an additional warning taken from a set list, and the option of additional colour photographs or other illustrations, also taken from a set list. All alcoholic drinks over 1.2% volume are required to state their alcohol content on their label. There is no current EU legislation for labelling, although since 2005, France has introduced legislation to carry warning labels on alcohol containers, with a message that no drinking should take place during pregnancy. In Finland, a new law on warning labels is to be introduced, and, in the United Kingdom, a partnership has been made with the alcohol industry regarding new labelling on alcohol containers and packaging. There is widespread support amongst the European population for introducing warning labels.

# 4

## **Consumer information and alcohol policy**

- 4.1. MARKETING OF ALCOHOLIC PRODUCTS
- 4.2. OTHER EDUCATIONAL APPROACHES
- 4.3. LABELLING OF ALCOHOLIC PRODUCTS
- 4.4. CONCLUSIONS

Health labelling must be considered in the more general sense of consumer information within the context of merchandising, advertising and marketing, including presentation and display, packaging, promotion, and point of sale, noting that there is not always a clear distinction between product information and the marketing of a product. A label is also not the only way to inform consumers. Packaging, information material and educational approaches are other means. In the context of advertising, it should be noted that there is an increasing amount of evidence that shows that the volume of advertisements increases the likelihood of young people starting to drink, the amount they drink, and the amount they drink on any one occasion. These findings are similar to the impact of advertising on smoking and eating behaviour. A variety of educational approaches have been used in an attempt to inform consumers and to reduce the harm done by alcohol, including education of younger people in classroom settings and information campaigns using mass media, including the use of drinking guidelines. Many careful systematic reviews have evaluated school based education which aimed to reduce alcohol related harm, and found that classroom based education is not an effective intervention to reduce alcohol related harm. Whilst drinking guidelines have been used in a number of countries, there have been no evaluations that find an impact of these guidelines on alcohol related harm. With regard to alcohol warning labels themselves, various reviews have concluded that there is little evidence that they have measurable effects on drinking behaviours. However, there is evidence that some intervening

variables are affected, such as intention to change drinking patterns (in relation to situations of heightened risk such as drinking driving), having conversations about drinking, and willingness to intervene with others who are seen as hazardous drinkers. The finding of limited impact on behaviour contrasts with evidence from tobacco where there is evidence of impact but this may reflect the nature of the warning labels. Recent research suggests that the introduction of more graphic and larger warnings for cigarettes has impacted on behaviour. However, despite the limited evidence for an impact, consumer protection principles would suggest, however, that where there is a risk to health in consuming alcoholic beverages, and, in particular, during pregnancy, when taking medication or when driving or operating machinery, consumers should be informed about the risks, noting that alcohol is not an ordinary commodity.

#### **4.1. MARKETING OF ALCOHOLIC PRODUCTS**

There is an enormous wealth of evidence that alcohol advertisements are related to positive attitudes and beliefs about alcohol amongst young people. In addition, the content of advertisements is related to expectancies about the use of alcohol amongst young people and the role of alcohol in their lives. Young people are particularly drawn to elements of music, characters, story and humour. Young people who like advertisements believe that positive consequences of drinking are more likely, their peers drink more frequently, and their peers approve more of drinking.

These beliefs interact to produce a greater likelihood of drinking, or of intention to drink in the near future. These results are not surprising, given that increased desires to drink (the creation of a positive image) must be one of the main aims of commercial communications.

One relatively large study looked into connections between children's awareness of alcohol advertising and their knowledge and beliefs about drinking (Grube 1995; Grube and Wallack 1994). The students' awareness of alcohol advertising was ascertained through presentations of a series of still photographs taken from television commercials for beer, with all references to the product or brand deleted. The children were asked if they had seen each advertisement and, if so, to identify the product being advertised. Children who were more aware of advertising had increased knowledge of beer brands and slogans as well as more positive beliefs about drinking. Although attempts were made to account for the possibility that prior beliefs and knowledge could affect the children's awareness of the advertising, it is still possible that the relationship is due to children who hold more positive beliefs about drinking being those who are more aware of advertising.

Another study found that young people with more positive affective responses to alcohol advertising held more favourable drinking expectancies, perceived greater social approval for drinking, believed drinking was more common among peers and adults, intended to drink more as adults, and drank with higher frequency and in greater quanti-

ties (Chen and Grube 2002). Again, although an attempt was made to control for the reciprocal effects of alcohol consumption, intentions, and beliefs on positive effect toward alcohol advertising, it remains possible that the relationship is due to children who drink alcohol and in larger quantities hold more positive responses to alcohol advertisements.

A number of studies have attempted to find out whether children and adolescents who like alcohol advertisements have different drinking behaviours from those who do not like the advertisements. In one study of 213 children aged 7 to 12 years, the more the children liked alcohol advertisements, the more likely they were to have experimented with alcohol (Austin and Nach-Ferguson 1995).

A study of 500 New Zealand children aged between 10 and 17 years found that the degree to which the children liked a set of beer advertisements influenced how much they expected to drink at age 20 years (Wyllie *et al.* 1998a). Statistical analysis concluded that, while liking alcohol advertising influences current drinking status and intentions, the reverse does not seem to be true. In a similar study of an older age group, stronger results were reported in 1,012 randomly-selected 18- to 29-year-olds (Wyllie *et al.* 1998b). In this case, the more the respondents liked the alcohol advertisements, the more likely they were to drink at greater rates and to agree with positive belief statements such as "Drinking is a good way to escape from the hassles of everyday life." Most important, the more they liked the advertisements, the more they reported

drinking problems such as getting into a physical fight because of drinking. Statistical modelling was used to propose that alcohol advertising and responses to alcohol advertising influence drinking beliefs, behaviours, and problems rather than the other way around.

Amongst 15 to 20 year olds, alcohol advertising is influential in shaping young people's attitudes and perceptions about alcohol advertising messages, which are in turn predictive of both positive expectancies and intentions to drink, suggesting that the effects of alcohol advertising on intentions to drink are mediated by cognitive responses to advertising messages and positive expectancies (Fleming *et al.* 2004). Fourteen year olds with greater exposure to advertisements in magazines, at sporting and music events and on television are more advertisement-aware than those with less exposure, as are teens who watch more TV, pay attention to beer advertisements and know adults who drink (Collins *et al.* 2003). Amongst 10-17 year olds, the perceived likeability of beer advertisements is a function of the positive affective responses evoked by the specific elements featured in the advertisements. Liking of specific elements featured in beer advertisements significantly contributed to the overall likeability of these advertisements and subsequently to advertising effectiveness indicated by purchase intent of product and brand promoted by these advertisements (Chen *et al.* 2005).

Six US-based well designed longitudinal studies and one Belgian well designed longitudinal study show that the volume of advertisements and media ex-

posure increase the likelihood of young people starting to drink, the amount they drink, and the amount they drink on any one occasion (see Table 1). There have been no published longitudinal studies that do not find such an effect. These findings are similar to the impact of advertising on smoking (Lovato *et al.* 2003) and eating behaviour (Hastings *et al.* 2003), and are not surprising, given that increased drinking must be the main hoped for outcome of commercial communications.

#### 4.2. OTHER EDUCATIONAL APPROACHES

A variety of educational approaches have been used in an attempt to reduce the harm done by alcohol, including: education of younger people in classroom settings; information campaigns using mass media, including the use of drinking guidelines; school based activity carried out as part of school plus family initiatives and as part of community action projects; and community initiatives aimed to challenge norms around alcohol consumption and distribution. Whilst the provision of information and persuasion to reduce alcohol related harm might seem appealing, particularly in relation to younger people, theoretical evidence would suggest that it is unlikely to achieve sustained behavioural change in an environment in which many competing messages are received in the form of marketing and social norms supporting drinking, and in which alcohol is readily available. Many careful systematic reviews have failed to detect an impact of such educational approaches, and thus they are not an alternative to effective regulation of commercial communicati-

ons. On the other hand, there is some evidence to support combining school and community interventions, in part because the community interventions may be successful in restricting access to alcohol by young people.

Although most media portrayals of alcohol are in the form of commercial advertisements, public health and safety perspectives are also portrayed in the mass media. Public service announcements on television or radio, paid counteradvertisements, billboards, magazine articles, newspaper pieces, and news or feature stories on television and radio all attempt to provide information about the risks and complications associated with drinking.

**Public service announcements (PSAs)** are messages prepared by nongovernmental organizations, health agencies or by media organizations for the purposes of providing important information for the benefit of a particular audience. In contrast to paid advertising, PSAs depend upon donated time or space for distribution to the public. When applied to alcohol, PSAs usually deal with “responsible drinking,” the hazards of driving under the influence of alcohol, and related topics. Despite their good intentions, PSAs are considered an ineffective antidote to the high-quality pro-drinking messages that appear much more frequently as paid advertisements in the mass media (see Ludwig 1994; Murray *et al.* 1996).

**Table 1 Results of longitudinal studies on impact of media and advertising exposure on alcohol use**

Study	Country	Age group (years)	Baseline sample size	Follow up (months)	Outcome at follow-up
Robinson et al. (1998)	US	14-15	2609	18	Each 1-hour increase in television viewing associated with a 9% increased risk for initiating drinking. Each 1-hour increase in watching music videos associated with a 31% increased risk for initiating drinking.
Wingood et al. 2003	US	14-18	522	12	High exposure to rap music leads to 1.5 times greater likelihood to use alcohol over 12 month period compared with low exposure.
Stacy et al. (2004)	US	11-12	2998	12	Those who watched 60% more alcohol advertisements on TV were 44% more likely to have used beer, 34% more likely to have ever used wine/ liquor, and 26% more likely to have had 3 or more drinks on one occasion.

Study	Country	Age group (years)	Baseline sample size	Follow up (months)	Outcome at follow-up
Van Den Bulck & Beullens (2005)	Belgium	13 + 16	2546	12	Quantity of alcohol consumed while going out related to overall TV viewing and their music video exposure.
Ellickson et al. (2005)	US	13-15	3111	36	Exposure to in-store beer displays, advertising in magazines and beer concession stands at sports or music events predicted drinking onset for non-drinkers after 2 years.
Snyder et al. (2006)	US	15-26	1872	21	For every 4% more alcohol advertisements seen on TV, radio, billboards and in magazines drank 1% more drinks per month, and for every 15% more exposure in their media market on alcohol advertising, drank 3% more drinks per month.
Sargent et al. (2006)	US	10-14	2406	12-24	Significant linear and quadratic relationship between movie alcohol exposure and initiation of drinking, with a higher dose-effect relationship at lower movie alcohol exposure levels compared to higher levels.
McClure et al. (2006) [Same study as Sargent et al. (2006)]	US	10-14	2406	12-24	Owners of alcohol branded merchandise had higher rates of alcohol initiation (25%) compared with non-owners (13.1%).

In many cases the messages in PSAs are intended to be particularly relevant to drinking by youth (Connolly *et al.* 1994; Holder 1994). Reviews point to the limited impact on alcohol use and alcohol-related problems from mass media in-

terventions that use a universal strategy (Gorman 1995). Nevertheless, a Canadian study (Casiro *et al.* 1994) found that after a T.V. campaign on the dangers of alcohol consumption during pregnancy, more women concluded that drinking

would put their baby at risk, and attributed this information to television. In general, there is a need for more research to find out what audiences perceive and understand from mass media campaigns (Martin *et al.* 1995). Looking at how media set the public policy agenda is potentially more fruitful (Casswell 1997). For example, portrayal of alcohol issues in the news media (print, T.V. and radio) tends to be simplistic, sensational and dramatic (Gusfield 1995), and focuses on stories about individual people rather than alcohol in its social perspective. These portrayals raise interesting questions about the way news reporting may shape public attitudes and policy about alcohol, but this area has not been extensively researched.

**Counter-advertising** involves disseminating information about a product, its effects, or the industry that promotes it, in order to decrease its appeal and use. It is distinct from other types of informational campaigns in that it directly addresses the fact that the particular commodity is promoted through advertising (Stewart 1997). Tactics include health warning labels on product packaging and media literacy efforts to raise public awareness of the advertising tactics of an industry, as well as prevention messages in magazines and on television. Counter-advertising may also be a module in community or school prevention programs (e.g., Giesbrecht *et al.* 1990; Greenfield and Zimmerman 1993), and be used as part of the multiple agenda of government spirits board retail systems (Goodstadt and Flynn 1993).

In most countries, the number of public service announcements and counteradvertisements on alcohol issues are at

best a small fraction of the volume of alcohol advertisements (see Fedler *et al.* 1994; Wyllie *et al.* 1996) and are rarely seen on television. Moreover, the quality of counter-advertising is often poor. A study of high school students in the Moselle region in France (Pissochet *et al.* 1999) found that respondents considered alcohol risk prevention advertising to be less effective than alcohol advertising, and daily drinkers were more critical than intermittent and nondrinkers.

**Media advocacy** However, mass media marketing can be used to reinforce community awareness of the problems created by alcohol use and to prepare the ground for specific interventions (Casswell *et al.* 1990; Holder and Treno 1997). Education and public information approaches can be used not just to seek to persuade the individual drinker to change his or her behaviour, but also to mobilise public support for prevention approaches that have demonstrated effectiveness (Casswell and Gilmore 1989), including limiting the availability of alcohol, drinking and driving countermeasures, and regulation and harm reduction in and around drinking environments. Media advocacy can also be used to support a shift in public opinion for policy changes (Wallack *et al.* 1993), for example, the introduction of standard drinks labelling on all Australian alcohol containers (Stockwell and Single 1997).

**School-based education** Whilst the provision of information and persuasion to reduce alcohol related harm might seem appealing, particularly in relation to younger people, it is unlikely to achieve sustained behavioural change in an environment in which many competing messages are received in the form of

marketing and social norms supporting drinking, and in which alcohol is readily available. Many careful systematic reviews have evaluated school based education which aimed to reduce alcohol related harm, and found that classroom based education is not an effective intervention to reduce alcohol related harm; although there is evidence of positive effects on increased knowledge about alcohol and in improved attitudes, there is no evidence for a sustained effect on behaviour (see Anderson & Baumberg 2006).

**Public education campaigns** In general, public information campaigns are also an ineffective antidote to the high quality, pro-drinking messages that appear far more frequently in the media (see Anderson & Baumberg 2006). The exception to these rather negative effects is the evidence for the impact of mass media campaigns to reduce drinking and driving, particularly in jurisdictions with strong policies in place concerning drinking and driving.

**Drinking guidelines** Whilst drinking guidelines have been used in a number of countries, there have been no evaluations that find an impact of these guidelines on alcohol related harm (see Anderson & Baumberg 2006). The United Kingdom's 'sensible drinking guidelines' when relied upon as a key prevention strategy in a liberalizing policy environment failed to deter increases in alcohol consumption.

**Industry responsible advertising** While most alcohol advertising on television is for alcohol products, alcohol companies also place substantial amounts of what are dubbed "responsibility" advertise-

ments, which may discourage drinking-driving or underage drinking, or otherwise encourage people to use alcohol responsibly and in moderation. According to the Center on Alcohol Marketing and Youth, from 2001 to 2003 alcohol companies placed 21,461 such advertisements, compared with 761,347 product advertisements. Youth were substantially more likely to be exposed to product than to responsibility advertisements: in 2003, they were 96 times more likely to see a product advertisement than an industry-funded advertisement about underage drinking, and 43 times more likely to see a product advertisement than an industry advertisement about drinking-driving (Center on Alcohol Marketing and Youth 2005). A recent study attempted to assess the impact of these messages on young people, and concluded that the advertisements were examples of strategic ambiguity, defined as "the strategic and purposeful use of messages with high levels of abstraction to simultaneously accomplish multiple, and often conflicting, organizational goals" (Smith *et al.* 2006). More so with teens (age 16 to 18 years in the study's sample) than with young adults (age 19 to 22 years), young people drew diverse messages from the advertisements. In the context of little evidence that such advertising is effective in encouraging responsible drinking behaviour (De Jong *et al.* 1992), the study found that young people's evaluative responses about the brewers who placed the advertisements were predominantly favourable, while interpretations taken from the advertisements were mostly pro-drinking.

### 4.3. LABELLING OF ALCOHOLIC PRODUCTS

#### Warning labels - an overview

Research on warning labels in general has not demonstrated a consistent pattern of effects. Several studies have found that warnings are effective (e.g., Adams and Edworthy 1995; Friedmann 1988), and others have not (e.g., Laughery *et al.* 1993; MacKinnon *et al.* 2002). In their meta-analysis, Cox and colleagues (1997) attempted to address these varied findings by assessing whether the inclusion of on-product warning labels influence consumers' behaviours. Although the results indicated widely varying rates of behavioural compliance, a meta-analysis of 15 studies demonstrated that warnings can effectively increase safe behaviours (effect size = 0.31,  $p < 0.05$ ).

More recent meta-analyses (Argo & Main 2004) on warning labels in general have found that warnings can attract consumers' attention, with the presence of vividness enhancing characteristics in warnings being more likely than the absence of the characteristics to attract consumers' attention. However, familiarity was found to moderate attention; thus, when consumers were familiar with a product, they were less likely to notice the warning. Further, warnings were more effective in attracting consumers' attention when they were on posters, signs, and/or advertisements, rather than just on the product. When consumers were presented with warning information, they were more likely to read and understand the information than when a warning was not present. Neither the presence (versus absence) of vividness-enhancing characteristics nor

familiarity appeared to affect recall of warning labels. In general, it seemed that warnings could moderately influence behavioural compliance (effect size = 0.19), with consumers being more likely to comply when they were familiar with a product than not. However, as the cost to comply increases (for example, the amount of time and or effort a consumer must exert to comply with a warning), the likelihood that consumers will follow the warning decreases.

The limited research that has examined the impact of repeatedly exposing participants to warnings has found that, over time, there is an increase in both attention and recall; however, the effects level off after 3.5 years (MacKinnon *et al.* 2000). Thus, this research provides evidence of the declining effectiveness of multiple exposures and emphasizes the importance of changing warning labels on certain products on a regular basis.

#### Warning labels and cigarette smoking

Cross-sectional surveys conducted in Canada during the 1990s found that the majority of smokers reported that package warning labels were an important source of health information, increasing their awareness of the risks of smoking (Health Canada 2001; Tandemar Research 1996).

In a Canadian study testing the impact of graphic cigarette warning labels, approximately one fifth of smokers surveyed reported smoking less as a result of the labels; only 1% reported smoking more (Hammond *et al.* 2004a). Although participants reported negative emotional responses to the warnings including fear (44%) and disgust (58%), smokers who reported greater negative

emotion were more likely to have quit, attempted to quit, or reduced their smoking three months later. Participants who attempted to avoid the warnings (30%) were no less likely to think about the warnings or engage in cessation behaviour at follow-up. Another Canadian survey found that one third of smokers reported that cigarette warning labels had motivated them to quit (Hammond et al. 2004b). Former smokers who quit following the introduction of the new graphic warning labels were nearly three times more likely to cite the warnings as a quitting influence than former smokers who quit prior to their introduction. Finally, 27% of all former smokers surveyed reported that warning labels helped them remain abstinent.

In Australia, relative to non-smokers, smokers demonstrated an increase in their knowledge of the main constituents of tobacco smoke and identified significantly more disease groups follow-

ing the introduction of new Australian warning labels in 1995 (Borland & Hill 1997)

In the Netherlands, 14% of smokers became less inclined to purchase cigarettes because of the new warnings, 32% said they prefer to purchase a pack without the new warnings, 18% reported that warnings increased their motivated to quit and 10% said they smoked less (Willemsen 2005). A strong dose-response relationship was observed between these effects and intention to quit.

A study across Australia, Canada, the United Kingdom and the United States found that health warnings on cigarette packages were a prominent source of health information, Table 2 (Hammond et al. 2006), with a significant association between the strength of package health warnings and the likelihood of citing packages as a source of health information, Figure 9.

**Table 2 Sources of information on the dangers of smoking and anti-smoking media.**

Source	CAN	AUS	UK	USA	Overall
TV	88.2%	90.4%	83.9%	86.2%	87.7%
Cigarette packages	84.3%	69.3%	56.1%	46.7%	64.6%
Magazine/newspaper	66.1%	34.4%	62.6%	62.8%	64.1%
Poster	57.4%	43.2%	51.3%	58.6%	56.2%
Radio	40.7%	42.7%	26.1%	45.2%	38.9%
Leaflets	35.3%	32.6%	37.7%	24.6%	33.2%
Shops/stores	25.7%	39.0%	14.0%	18.5%	24.5%
Movie theatre	8.5%	12.7%	11.1%	10.1%	11.1%
Internet	10.4%	6.4%	4.1%	12.4%	8.4%

Source: Hammond et al. (2006).

Larger, more comprehensive warnings were more likely to be cited as a source of health information. For example, over 84% of smokers living in Canada – the country with the strongest health warnings – cited packages as a source of health information, compared with only 47% of those in the USA, the country with the weakest health warnings (Hammond et al. 2006). Not only were health warnings self-identified as an important source of health information about smoking, but also as an effective means of communicating health information. The results provided evidence at both the individual and country-level that health warnings on cigarette packages are strongly associated with health knowledge. First, noticing labels was strongly associated with endorsing each of the five health effects, after controlling for smoking behaviour, demographic variables, and the frequency of noticing antimedia in general. Smokers who reported noticing warnings were

between 1.5–3.0 times more likely to believe in each health effect. Second, in all five cases where labelling policies differed between countries, smokers living in countries with government mandated warnings reported greater health knowledge. This pattern is best illustrated in the case of smokers' knowledge of impotence. Canada was the only country where packages carry warnings about impotence, and accordingly, Canadian smokers were almost three times more likely than smokers from the other three countries to believe that smoking causes impotence. Finally, health knowledge was strongly associated with intentions to quit among smokers in all four countries. This finding supports previous evidence that, although awareness and acceptance of the health risks of smoking may not be a sufficient condition for quitting, it is likely a necessary one for most smokers and serves an important source of motivation.

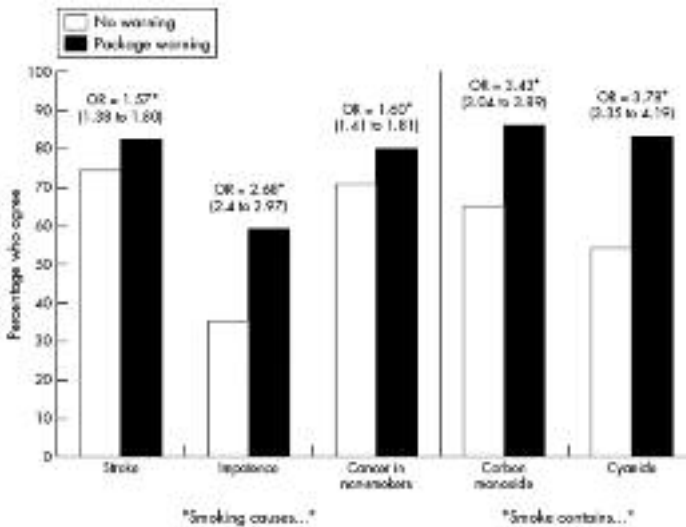


Figure 9 Health knowledge as a function of tobacco labeling policy. \*Odds ratios (ORs) are adjusted for age, sex, income, ethnicity, cigarettes smoked per day, and the number of information sources cited, other than cigarette packages. Source: Hammond et al. (2006).

The effectiveness of warning labels in communicating health effects suggests that warnings could also be used to address knowledge deficits in other areas, such as filter ventilation, the risks of “light” or “low-tar” cigarettes, and the effects of behavioural compensation (Shiffman et al. 2001; Borland et al. 2004; Kozlowski et al. 1998; Cummings et al. 2004). Given their universal reach, health warnings may also help to reduce the disparities in health knowledge by providing low-income smokers with regular access to health information (Andersson & Leppert 2001; Price & Everett 1994).

### **Warning labels and nutrition**

A systematic review that was undertaken to explore published and unpublished research into consumer understanding and use of nutrition labelling which is culturally applicable in Europe found only a few studies of high or medium-high quality (Cowburn & Stockley 2005). The review found that the reported use of nutrition labels is high but more objective measures suggested that actual use of nutrition labelling during food purchase may be much lower. Whether or not consumers can understand and use nutrition labelling depended on the purpose of the task. Available evidence suggested that consumers who do look at nutrition labels can understand some of the terms used but are confused by other types of information. Most appear able to retrieve simple information and make simple calculations and comparisons between products using numerical information, but their ability to interpret the nutrition label accurately reduces as the complexity of the task increases. The addition of interpretational aids like ver-

bal descriptors and recommended reference values helped in product comparison and in putting products into a total diet context. A number of research gaps were also highlighted:

- More research is needed to elucidate consumer understanding and use of nutrition labelling in all European countries;
- More use is required of methodologies that assess understanding and use of labels in real-life situations;
- Objective methods of assessing nutrition label understanding and use need to be developed and refined;
- The evidence base would benefit from studies using larger, more representative samples and by eliciting information about the label-reading habits and interpretation abilities of special population groups such as older people, minority ethnic groups and younger people;
- More research is needed to explore what motivates people to use nutrition labels. Not much is known about any differences between label users and non-users and in particular what measures would encourage non-users to change their behaviour;
- Very little research was identified of interventions to increase understanding and use of nutrition labels; and
- More research could help to explore any association between label reading and diet quality.

### **Warning labels and alcohol**

A systematic review of the evidence of the impact of alcohol warning labels (Stockwell 2006) noted the following:

## US warning labels

The US warning label legislation required a series of before and after surveys to be conducted to evaluate whether the legislation was achieving its stated objectives (Greenfield 1997; Greenfield et al. 1999). Anticipating the introduction of the US labelling in 1989,

a baseline survey of the drinking behaviour, beliefs about alcohol, and awareness of warning labels among the adult US population was commissioned, in addition to four further surveys in 1990, 1991, 1993 and 1994, with comparison surveys conducted in the control site of Ontario, Canada.



US Warning label

## Awareness of the warning labels

By 1994, the surveys found that 43% of US respondents reported having seen the warning label, an increase from 30% in 1990. Much lower percentages of Canadians reported having seen the labels throughout the study period. Awareness of the labels was significantly higher by 1994 among young people (61% of 18 to 29 year olds) and among heavy drinkers (74%). Among those claiming to have seen the labels, recall of the specific messages actually on the labels increased over the study period and, by 1994, was highest for “birth defects” (81%). Recall of the drink driving message was somewhat lower (46%), and recall of the message guarding operating machinery was the lowest (39%). Recall of “dummy” messages that were not used concerning cancer and arthritis was substantially lower, indicating genuine increases in recall. An earlier

analysis of the first two years of the study (Kaskutas and Graves, 1994) reported that women of childbearing age were also especially likely to recall seeing the message about birth defects.

## Public support for warning labels

By 1991, public support for alcohol warning labels was higher than for any of ten other strategies, including treatment, and regulation of price, availability, advertising, and service of alcohol to intoxicated customers (Room et al. 1995). In answer to the question “Do you think alcoholic beverages should have warning labels about possible health hazards?”, 91% of US respondents and 86% of Ontario residents indicated support. The level of public support increased significantly over time in both countries but the most dramatic change was between 1989 and 1990 in Ontario, from 75% to 86%. This can be

interpreted as reflecting awareness of the new labels in the US and a belief that they should also have been introduced in Canada. During the study period, support for several other alcohol policies declined, and alcohol warning labels in the US was the only strategy for which support significantly increased. These results suggest that it is highly probable that introducing the labels strengthened public support for this policy in the US, and also increased demand for the introduction of this policy in Canada shortly after their introduction in the US.

**Changes in behaviour** Analyses of the early years found significant increases in the likelihood of respondents reporting having taken part in conversations about risks of alcohol consumption from before the introduction of the labels to the year afterwards (Kaskutas and Greenfield, 1992). Reporting having discussed the risks of alcohol consumption was especially marked among respondents who recalled seeing the label, suggesting a direct link. In later years, this finding was still apparent in relation to discussing the dangers of drinking during pregnancy though not for risks relevant to the other health messages. A later analysis reported that pregnant women who saw the labels were more likely to discuss the issue (Kaskutas et al. 1998). In addition, a “dose-response” effect was found such that the more types of warnings the respondents had seen (on adverts, at point-of-sale, in magazines and on containers), the more likely they were to have discussed the issue. No direct impacts of warning labels on consumption or alcohol-related problems have been reported (Grube and Nygaard 2001; Agostinali and Grube 2002).

**Adolescents** A study of the impact of US alcohol warning labels on adolescents found clear and significant increases in the children’s awareness of the labels and recall of their messages (MacKinnon et al. 2000). However, there were no beneficial changes that could be attributed to the warning labels concerning the level of belief in the messages (which was very high to begin with) in drinking behaviour or in relation to drinking and driving.

**Pregnant women** Another study evaluating the US warning labels examined impacts on perceived risks and drinking behaviour of the messages on 4,397 black, pregnant, consecutive attendees at an antenatal clinic in Detroit (Hankin et al. 1993), sampled from May 1989 (before the introduction of the labels) and up to September 1991. Again, evidence of awareness and recall of the messages was found. No evidence was found of a change in drinking behaviour among the more at-risk heavy consumers of alcohol attending a clinic. Only the low-risk group of light drinkers appeared to respond to the message by changing their behaviour.

### **The Australian experience with standard drinking labeling**

In December 1995, the Australian Commonwealth, State and Territory health ministers agreed with a proposal put to the National Food Authority that labels be required on all alcohol containers, expressing their alcohol content in terms of 10-gram units, commonly known as “standard drinks”. Not surprisingly, tracking research conducted by the federal health department found evidence of increasing awareness of the concept of a “standard drink” since the

label's introduction (quoted in Loxley et al. 2004). The decision to introduce the labeling was publicly justified on the basis of research indicating that most drinkers could not state the number of standard drinks in their usual alcoholic beverage containers, and supported the consumer's "right to know" (Stockwell and Single, 1997). Previous research had used an experimental design to test drinkers' knowledge of how much alcohol was in an array of examples of their favourite beverages, using either standard drink labels or the usual labels stating only the percentage alcohol content by volume. Without standard drink labels, drinkers often underestimated alcohol content and were usually inaccurate in their estimates. With standard drink labels, not surprisingly, very few errors were made (Stockwell et al. 1991). While there is evidence of gradually declining consumption and alcohol-related deaths in Australia since the mid-1990s, there has been no controlled study to examine whether standard drink labeling in combination with national drinking guidelines has contributed to this reduction. Since 2006, the labels have included logos: a schooner glass on beer labels; a wine glass on wine bottle labels; and a spirit tumbler on spirit containers.

#### 4.4. CONCLUSIONS

Consistent with the experience of smoking and eating behaviour, a small number of longitudinal studies have now shown that commercial communications on alcohol increase the likelihood of young people starting to drink, and of those who do drink, to drink in a more risky manner. Educational approaches

do not seem to be a counter approach to commercial communications since the evidence shows that education has so far not worked in reducing riskier drinking and the harm done by alcohol. Although research suggests that warning labels in general can influence behaviour, studies of the limited experience for alcohol find no evidence of an impact of warning labels in influencing behaviour. This is somewhat in contrast to the experience for tobacco, where the evidence suggests that the larger and more graphic warning labels have an impact in reducing smoking behaviour. The introduction of warning labels on tobacco products was driven by the recognition that tobacco is not an ordinary commodity, and it can be argued that the same principle applies to alcohol.



# 5

## Conclusions and recommendations

5.1. CONCLUSIONS

5.2. RECOMMENDATIONS

## 5.1. CONCLUSIONS

### Alcohol as a toxic and dependence producing substance

Alcohol (ethyl alcohol, ethanol) is a chemical solvent that has toxic effects on the body, being a carcinogen, teratogen and intoxicant. It is also a drug which has psychoactive effects that underlie its capacity to produce alcohol dependence. A great deal is now known about the toxic and pharmacological effects of alcohol that underlie alcohol related harm. Of concern to consumer protection, alcohol is a ubiquitous toxin that can harm almost any system or organ of the body leading to more than 60 different acute and chronic disorders. Alcohol can also exacerbate preexisting mental and physical disorders, adversely interact with other prescribed and illicit drugs in the body, and contribute to a wide range of social problems. There is wide individual variation in the toxic effects of consuming a given amount of alcohol. Further the effects of alcohol show no threshold below which alcohol can be regarded as entirely risk free. The importance of alcohol as a toxic agent can be gained from its contribution to ill health and premature death, where it is the third most important risk factor in the European Union, after raised blood pressure and tobacco use. Labelling can be seen as a means of delivering a clear message to consumers that alcohol is not an ordinary commodity; for example a message about alcohol and pregnancy; or a message informing young people that alcohol is a toxic substance.

### Consumer protection in Europe

Labelling is an important information tool which can be considered as a part of communication between authorities,

producers and consumers. It is not the only route for communicating information to the consumer, and should be considered in the wider context of consumer information. With regard to tobacco, there is a Europe wide Directive which stipulates that warning labels must carry a general warning and an additional warning taken from a set list, and the option of additional colour photographs or other illustrations, also taken from a set list. All alcoholic drinks over 1.2% volume are required to state their alcohol content on their label.

There is no current EU legislation for labelling, although since 2005, France has introduced legislation to carry warning labels on alcohol containers, with a message that no drinking should take place during pregnancy. In Finland, a new law on warning labels is to be introduced, and, in the United Kingdom, a partnership has been made with the alcohol industry regarding new labelling on alcohol containers and packaging. There is widespread support amongst the European population for introducing warning labels.

### Evidence for the impact of warning labels

Labelling must be considered in the more general sense of consumer information within the context of merchandising, advertising and marketing, including presentation and display, packaging, promotion, and point of sale, noting that there is not always a clear distinction between product information and the marketing of a product. Further, a label is also not the only way to inform consumers. Packaging, information material and educational approaches are other means. Consistent with the experience of smoking and

eating behaviour, a small number of longitudinal studies have now shown that commercial communications on alcohol increase the likelihood of young people starting to drink, and of those who do drink, to drink in a more risky manner. Educational approaches do not seem to be a counter approach to commercial communications since the evidence shows that education has so far not worked in reducing riskier drinking and the harm done by alcohol. Although research suggests that warning labels in general can influence behaviour, studies of the limited experience for alcohol find no evidence of an impact of warning labels in influencing behaviour. This is somewhat in contrast to the experience for tobacco, where the evidence suggests that the larger and more graphic warning labels have an impact in reducing smoking behaviour. The introduction of warning labels on tobacco products was driven by the recognition that tobacco is not an ordinary commodity, and it can be argued that the same principle applies to alcohol.

## 5.2. RECOMMENDATIONS

1. The evidence base testing the impact of warning labels is very limited and largely restricted to the United States. Any European country introducing warning labels should ensure that adequately funded longitudinal research is employed to test the impact of the warning labels on knowledge, expectancies and behaviour, controlling for the impact of competing messages from the marketing of alcohol.
2. Despite the limited evidence for an impact, consumer protection principles would suggest that where there is a risk to health in consuming alcoholic beverages, and, in particular, during pregnancy, when taking medication or when driving or operating machinery, consumers should be informed about the risks through warning labels, recognizing that alcohol is not an ordinary commodity.
3. Health messages and warnings on alcohol product packaging and labelling should be standardized and be part of an integrated strategy to provide information to consumers about alcohol and part of integrated policies and programmes to reduce the harm done by alcohol.
4. All messages or warnings should be pre-tested throughout Member States and the Union as a whole before being implemented, and should be re-evaluated over time as part of an ongoing strategy to reduce the harm done by alcohol.
5. All messages and warnings should rotate and should be of sufficient vividness and strength to attract consumers' attention.

## REFERENCES

- Adams, A.S. and Edworthy J. (1995), "Quantifying and Predicting the Effects of Basic Text Display Variables on the Perceived Urgency of Warning Labels: Trade-offs Involving Font Size, Border Weight, and Color," *Ergonomics*, 38 (11), 2221-37.
- Anderson, P. & Baumberg, B. (2006) *Alcohol in Europe: A Public Health Perspective -- Report to the European Commission*. London: Institute of Alcohol Studies. ([http://ec.europa.eu/health-eu/news\\_alcoholineurope\\_en.htm](http://ec.europa.eu/health-eu/news_alcoholineurope_en.htm)). Accessed June 2007.
- Anderson, P. (2007) *Commercial Communications and Alcohol*. Utrecht: National Foundation for Alcohol Prevention.
- Andersson P, Leppert J. Men of low socio-economic and educational level possess pronounced deficient knowledge about the risks factors related to coronary heart disease. *J Cardiovasc Risk* 2001;8:371-7.
- Argo, J.J. & Main, K.J. (2004). Meta-analyses of the effectiveness of warning labels. *Journal of Public Policy & Marketing* 23 193-208.
- Austin, E.W. and Nach-Ferguson, B. (1995): Sources and influences of young school-age children's general and brand-specific knowledge about alcohol. *Health Communication* 7: 1-20.
- Babor TF, Caetano R, Casswell S, Edwards G, Giesbrecht N, Graham K, Grube JW, Gruenewald PJ, Hill L, Holder HD, Homel R, Österberg E, Rehm J, Room R & Rossow I (2003). *Alcohol: No Ordinary Commodity. Research and Public Policy*. Oxford, Oxford Medical Publication, Oxford University Press.
- Barrett, M.E., Wong, F.Y. & McKay, D.R.R. (1993). Self-reported alcohol use among women of childbearing age and their knowledge of alcohol warning labels and signs. *Archives of family medicine* 1993 2 1260-1264.
- Blomgren, J., Martikainen, P., Mäkelä, Pia., and Valkonen, T. (2004). "The Effects of Regional Characteristics on Alcohol-Related Mortality – a Register-Based Multilevel Analysis of 1.1 Million Men." *Social Science and Medicine*, 58: 2523-35.
- Borland R, Hill D. Initial impact of the new Australian tobacco health warnings on knowledge and beliefs. *Tob Control* 1997;6:317-25.
- Borland R, Yong HH, King B, et al. Use of and beliefs about 'light' cigarettes in four countries: findings from the International Tobacco Control Policy Evaluation Survey. *Nicotine Tob Res* 2004;6(suppl 3): S311-21.
- Caetano, R. and Cunradi, C. (2002) Alcohol dependence: a public health perspective. *Addiction* 97 633-645.
- Casiro O.G., Stanwick R.S., Pelech A., Taylor, V., Friesen, F., Fast, M., Peabody, D., Alto, L., Edey-Mazowitz G, Dean, H, and Esquivel, A. (1994) Public awareness of the risks of drinking alcohol during pregnancy: The effects of a television campaign. *Canadian Journal of Public Health* 85, 23-27.
- Casswell S. (1997) Public discourse on alcohol. *Health Promotion International* 12, 251- 257.
- Casswell, S. and Gilmore, L. (1989) Evaluated community action project on alcohol. *Journal of Studies on Alcohol*, 50, 339-346.
- Casswell, S., Ranson, R. and Gilmore, L. (1990). Evaluation of a mass-media campaign for the primary prevention of alcohol-related problems. *Health Promotion International* 5 9-17.
- Center on Alcohol Marketing and Youth (2005). *Alcohol Industry "Responsibility" Advertising on Television, 2001 to 2003*. <http://camy.org/research/responsibility2005/>.
- Chen M-J, Grube JW. (2002). TV beer and soft drink advertising: what young people like and what effects? *Alcohol Clin Exp Res* 26(6):900- 6.
- Chen MJ; Grube JW; Bersamin M; Waiters E; Keefe DB (2005). Alcohol advertising: what makes it attractive to youth? *J Health Commun Sep*;10(6):553-65.
- Collins RL; Schell T; Ellickson PL; McCaffrey D (2003). Predictors of beer advertising awareness among eighth graders. *Addiction Sep*;98(9):1297-306.
- Collins, R. L., P. L. Ellickson, et al. (2005). "Saturated in beer: Awareness of beer advertising in late childhood and adolescence." *Journal of Adolescent Health Care* 37(1): 29-36.
- Connolly, G.M. and Casswell, S. and Zhang, J.F. and Silva, P.A. (1994): Alcohol in the mass media and drinking by adolescents: A longitudinal study. *Addiction* 89: 12551263.
- Corrao, G., Bagnardi, V., Zambon, A. and La Vecchia C. (2004) A meta-analysis of alcohol consumption and the risk of 15 diseases. *Preventive Medicine* 38 613-619.
- Cowburn, G. & Stockley, L. (2005). Consumer understanding and use of nutrition labeling: a systematic review. *Public Health Nutrition*: 8(1), 21-28
- Cox, Eli P., III, Michael S. Wogalter, Sara L. Stokes, and Elizabeth J. Tipton Murff (1997), "Do Product Warnings Increase Safe Behavior? A Meta-Analysis," *Journal of Public Policy & Marketing*, 16 (Fall), 195-204.
- Cummings KM, Hyland A, Bansal MA, et al. What do Marlboro Lights smokers know about low-tar cigarettes? *Nicotine Tob Res* 2004;6(suppl):S23-32.
- DeJong W. and Langford L.M. (2002) A typology for campus-based alcohol prevention: moving toward environmental management strategies. *Journal of Studies on Alcohol Suppl. No.14*, 140-147.
- Ellickson, P. L., R. L. Collins, et al. (2005). "Does alcohol advertising promote adolescent drinking? Results from a longitudinal assessment: Corrigenda." *Addiction* 100(8): 1201.
- Eurobarometer (2007). *Attitudes towards Alcohol*. [http://ec.europa.eu/health/ph\\_determinants/life\\_style/alcohol/documents/eb272\\_en.pdf](http://ec.europa.eu/health/ph_determinants/life_style/alcohol/documents/eb272_en.pdf). Accessed June 2007.
- Faden, V.B. & Goldman, M. Eds. (2005) *The Effects of Alcohol on Physiological Processes and Biological Development*. *Alcohol Research and Health*, 28(3), pp 125-132.
- Fedler F., Philips M., Raker P.Schefsky, D. and Soluri, J. (1994) Network commercial promote legal drugs:

- Outnumber anti-drug PSA's 45-to-1. *Journal of Drug Education* 24, 291-302.
- Fleming K; Thorson E; Atkin CK (2004). Alcohol advertising exposure and perceptions: links with alcohol expectancies and intentions to drink or drinking in underaged youth and young adults. *J Health Commun Jan-Feb;9(1):3-29*.
- Friedmann, Keyla (1988), "The Effect of Adding Symbols to Written Warning Labels on User Behavior and Recall," *Human Factors*, 30 (4), 507-515.
- Giesbrecht N., Conley P., Denniston R., Gliksman L., Holder H.D., Pederson A., Room R., and Shain M. (eds.) (1990) *Research, Action, and the Community: Experiences in the Prevention of Alcohol and Other Drug Problems*. Rockville, Maryland: Office for Substance Abuse Prevention.
- Goodstadt M. and Flynn L. (1993) Protecting oneself and protecting others: refusing service, providing warnings, and other strategies for alcohol warnings. *Contemporary Drug Problems* 20, 277-291
- Gorman D.M. (1995) Are school-based resistance skills training programs effective in preventing alcohol abuse? *Journal of Alcohol and Drug Education* 41, 74-98.
- Gray, J.A.M. (2001). *Evidence-based Health Care*. London: Churchill Livingstone.
- Greenfield T.K. and Zimmerman R. (eds.) (1993) *CSAP Prevention Monograph - 14: Second International Research Symposium on Experiences with Community Action Projects for the Prevention of Alcohol and Other Drug Problems*. Washington, US: Department of Health and Human Services.
- Greenfield, T. (1997) Warning Labels: Evidence on harm-reduction from long-term American surveys. In: Plant, M., Single, E. and Stockwell, T. (Eds.) *Alcohol: Minimizing the harm*. London: Free Association Books.
- Greenfield, T., Graves, K. and Kaskutas, L. (1999). Long-term effects of alcohol warning labels: Findings from a comparison of the United States and Ontario, Canada. *Psychology & Marketing*, Vol 16(3), 261-282.
- Grube, J.W. and Wallack, L. (1994) Television beer advertising and drinking knowledge, beliefs, and intentions among school children. *American Journal of Public Health* 84, 254-259.
- Grube, J.W. (1995). Television alcohol portrayals, alcohol advertising, and alcohol expectancies among children and adolescents. In: Martin, S.E., and Mail, P., eds. *Effects of the Mass Media on the Use and Abuse of Alcohol*. NIAAA Research Monograph No. 28. NIH Pub. No. 95-3743. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism, pp. 105-121.
- Gunzerath, L., Faden, V., Zakhari, S and Warren, K. (2004) National Institute on Alcohol Abuse and Alcoholism report on moderate drinking. *Alcoholism: Clinical and Experimental Research* 28 829-847.
- Gusfield J. (1995) Meta-analytic perspective on "alcohol in American culture". In: Martin S.E. and Mail P. (eds.) *Effects of the Mass Media on the Use and Abuse of Alcohol: NIAAA Research Monograph* No. 28, pp. 31-35. Bethesda, Maryland: National Institute on Alcohol Abuse and Alcoholism.
- Hammond D, Fong GT, McDonald PW, et al. Graphic cigarette package warning labels and adverse outcomes: evidence from Canadian smokers. *Am J Public Health* 2004;94:1442-5.
- Hammond, D., Fong, G.T., McNeill, A., Borland, R. & Cummings, K.M. (2006). Effectiveness of cigarette warning labels in informing smokers about the risks of smoking: findings from the International Tobacco Control (ITC) Four Country Survey Tobacco Control 2006;15(Suppl III):iii19-iii25.
- Hammond D, McDonald PW, Fong GT, et al. The impact of cigarette warning labels and smoke-free by-laws on smoking cessation: evidence from former smokers. *Can J Public Health* 2004;95:201-4.
- Hankin, J., Firestone, I., Sloan, J., Ager, J., Goodman, A., Sokmol, R. and Martier, S. (1993) The impact of the alcohol warning label on drinking during pregnancy. *Journal of Public Policy and Marketing*, 12(1), 10-18.
- Hastings GB, Stead M, McDermott L, Forsyth AJM, Mackintosh AM, Rayner M et al. (2003). Review of Research on the Effects of Food Promotion to Children - Final Report and Appendices. Prepared for the Food Standards Agency. Published on Food Standards Agency website. Available at <http://www.food.gov.uk/multimedia/pdfs/foodpromotiontochildren.pdf>, accessed 28 April 2005.
- Health Canada. Baseline surveys: the health effects of tobacco and health warning messages on cigarette packages. Prepared by Environics Research Group, 2001.
- Hilton, M.E. & Kaskutas, L. (1991). Public support for warning labels on alcoholic beverage containers. *British Journal of Addiction* 1991 86 1323-1333.
- Holder H.D. (1994) Mass communication as an essential aspect of community prevention to reduce alcohol-involved traffic crashes. *Alcohol, Drugs and Driving*, 10, 3-4.
- Holder, H.D. and Treno, A.J. (1997). Media advocacy in community prevention: news as a means to advance policy change. *Addiction* 92 5189-199.
- Kaskutas, L. and Graves, K. (1994) Relationship between cumulative exposure to health messages and awareness and behaviour-related drinking during pregnancy. *Substance Abuse*, 9 (2), 115-124.
- Kaskutas, L. and Greenfield, T. (1992) First effects of warning labels on alcoholic beverage containers. *Drug and Alcohol Dependence*, 31, 1-14.
- Kaskutas, L., Greenfield, T. and Lee, M. (1998) Reach and effects of health messages on drinking during pregnancy. *Journal of Health Education*, 29, 11-17.
- Kaskutas, L.A. & Graves, K. (1994). Relationship between cumulative exposure to health messages and awareness and behaviour-related drinking during pregnancy. *American Journal of Health Promotion* 1994 9 115-124.

- Kozlowski LT, White EL, Sweeney CT, et al. Few smokers know their cigarettes have filter vents. *Am J Public Health* 1998;88:681-2.
- Kunst, A. E., Groenhouf, F., Mackenbach, J. P., and EU Working Group on Socioeconomic Inequalities in Health (1998). "Occupational Class and Cause Specific Mortality in Middle Aged Men in 11 European Countries: Comparison of Population Based Studies." *British Medical Journal*, 316: 1636-42.
- Laughery, Kenneth R., Kent P. Vaubel, Stephen L. Young, John W. Brelsford Jr., and Anna L. Rowe (1993). "Explicitness of Consequence Information in Warnings," *Safety Science*, 16 (5), 597-613.
- Lovato C, Linn G, Stead LF, Best A. (2003). Impact of tobacco advertising and promotion on increasing adolescent smoking behaviours. *The Cochrane Database of Systematic Reviews*, Issue 3. Art. No.: CD003439. DOI: 10.1002/14651858.CD003439.
- Loxley W, Toumbourou J, Stockwell T, et al. The Prevention of Substance Use, Risk and Harm in Australia: A Review of the Evidence. Canberra: Australian Government Department of Health and Ageing; 2004
- Ludwig M.J. (1994) Mass media and health education: A critical analysis and reception study of a selected anti-drug campaign. *Dissertation Abstracts International* 55, 1479A.
- MackKinnon, D.P. & Fenaughty, A.M. (1993) Substance use and memory for health warning labels. *Health Psychology* 1993 12 147-150.
- MackKinnon, David P. Liva Nohre, Jeewon Cheong, Alan W. Stacy, and Mary Ann Pentz (2002), "Longitudinal Relationship Between the Alcohol Warning and Alcohol Consumption," *Journal of Studies on Alcohol*, 62 (2), 221-26.
- MackKinnon, David P. Mary Ann Pentz, and Alan W. Stacy (2000), "The Alcohol Warning and Adolescents: 5-Year Effects," *American Journal of Public Health*, 90 (10), 1589-94.
- Martin, S.E. (1995) Alcohol and the mass media: Issues, approaches, and research directions. In S. Martin (ed.), *The Effects of Mass Media on the Use and Abuse of Alcohol* (pp. 277-295). Rockville, MD: National Institute on Alcohol Abuse and Alcoholism.
- McClure, A. C., S. Dal Cin, et al. (2006). "Ownership of alcohol-branded merchandise and initiation of teen drinking." *American journal of preventive medicine* 30(4): 277-283.
- McKinnon, D., Nohre, L., Pentz, M. and Stacy, A. (2000) The alcohol warning and adolescents: 5-year effects. *American Journal of Public Health*, 90 (10), 1589- 1594.
- Murray J.P., Stam A., and Lastovicka J.L. (1996) Paid-versus donated-media strategies for public service announcement campaigns. *Public Opinion Quarterly* 60, 129.
- Nash Parker, R., Saltz, R.F. & Hennessy, M. (1994). The impact of alcohol beverage container warning labels on alcohol-impaired drivers, drinking drivers and the general population in northern California. *Addiction* 1994 89 1639-1651.
- O'Connor R. J., Kozlowski, L. T., Borland, R., Gray, N., Hammond, D., and McNeill, A. (2006) Relationship between constituent labelling and reporting of tar yields among smokers in four countries *Journal of Public Health* 2006 28(4):324-329;
- Paljärvi, T., Mäkelä, P. and Poikolainen, K. (2005). Pattern of drinking and fatal injury: a population-based follow-up study of Finnish men. *Addiction* 100 1851-1859.
- Pissochet P, Biache P, and Paille F. (1999) Alcohol, publicite et prevention: le regard des jeunes [Alcohol, advertising and prevention: young people's point of view] *Alcoologie* 21, 15-24.
- Price JH, Everett SA. Perceptions of lung cancer and smoking in an economically disadvantaged population. *J Community Health* 1994;19:361-75.
- Rehm J, Room R, Monteiro M, Gmel G, Graham K, Rehn T, Sempos CT, Frick U, Jernigan D. Alcohol. (2004) In: WHO (ed), *Comparative quantification of health risks: Global and regional burden of disease due to selected major risk factors*. Geneva: WHO.
- Rehm, J. (2005). "Volume of Alcohol Consumption, Patterns of Drinking and Burden of Disease in the European Region - Implications for Alcohol Policy." 10th meeting of national counterparts for alcohol policy in the WHO European Region, Stockholm 13-15 April 2005 [conference proceeding]
- Robinson TN, Chen HL, Killen JD. (1998). Television and music video exposure and risk of adolescent alcohol use. *Pediatrics* 102:e54-9.
- Room, R., Graves, K., Giesbrecht, N., and Greenfield, T. (1995) Trends in public opinion about alcohol policy initiatives in Ontario and the US 1989-91. *Drug and Alcohol Review*, 14, 35-47.
- Rossow, I. (2001). "Drinking and Violence: a Cross-Cultural Comparison of the Relationship Between Alcohol Consumption and Homicide in 14 European Countries." *Addiction*, 96(5): 577-592.
- Sanchez-Carbonell, X., Guardiola, E., Belles, A. & Beranuy, M. (2005). European Union scientific production on alcohol and drug misuse (1976-2000). *Addiction* 100 1166-1174.
- Sargent, J. D., T. A. Willis, et al. (2006). "Alcohol Use in Motion Pictures and Its Relation with Early-onset Teen Drinking." *Journal of Studies on Alcohol* 67(1): 54-65.
- Shiffman S, Pillitteri JL, Burton SL, et al. Smokers' beliefs about "Light" and "Ultra Light" cigarettes. *Tob Control* 2001;10(suppl 1):i17-23.
- Smith, S. W., C. K. Atkin, et al. (2006). "Are "Drink Responsibly" Alcohol Campaigns Strategically Ambiguous?" *Health Communication* 20(1): 1-11.
- Snyder, L. and M. Slater (2006). "In Response." *Archives of pediatrics and adolescent medicine* 160: 858.
- Stacy, A. W., J. B. Zogg, et al. (2004). "Exposure to televised alcohol ads and subsequent adolescent alcohol use." *American Journal of Health Behavior* 28(6): 498-509.

- Stewart K. (1997) Environmentally oriented alcohol prevention policies for young adults. In: Substance Abuse and Mental Health Services Administration, Center for Substance Abuse Prevention, Secretary's Youth Substance Abuse Prevention Initiative: Resource papers. Prepublication documents, pp. 107–157. Rockville, MD: Author.
- Stockwell, T (2006) A Review Of Research Into The Impacts Of Alcohol Warning Labels On Attitudes And Behaviour. Centre for Addictions Research of BC University of Victoria British Columbia, Canada. <http://www.carbc.uvic.ca/pubs/AlcWarningLabelsTS.pdf>.
- Stockwell, T. and Single, E. (1997). "Standard unit labelling on alcohol containers." In: Plant, M., Single, E. and Stockwell, T. (Eds.). *Alcohol : Minimising the Harm*. Freedom Association Press Ltd, London.
- Stockwell, T., Blaze-Temple, D. and Walker, C. (1991). "A test of the proposal to label containers of alcoholic drink with alcohol content in standard drinks." *Health Promotion International*, 6, 3, 207-215.
- Stockwell, T.R. (2001). "Harm reduction, drinking patterns and the NHMRC Drinking Guidelines." *Drug and Alcohol Review*. 20, 1, 121-129.
- Taki Y, Kinomura S, Sato K, Goto R, Inoue K, Okada K, Ono S, Kawashima R, Fukuda H. Both global gray matter volume and regional gray matter volume negatively correlate with lifetime alcohol intake in non-alcohol-dependent Japanese men: A volumetric analysis and a voxel-based morphometry. *Alcohol Clin Exp Res* 2006; 30:1045-1050.
- Tandemar Research, P. f. H. C. Cigarette packaging study: The evaluation of new health warning messages (Rep. No. TR#663022), 1996.
- Van Den Bulck, J. and K. Beullens (2005). "Television and Music Video Exposure and Adolescent Alcohol Use While Going Out." *Alcohol and Alcoholism* 40(3): 249-253.
- Wallack, L., Dorfman, L., Jernigan, D. and Themba, M. (1993). *Media advocacy and public health – power for prevention*. Newbury Park, CA: Sage.
- Willemsen, M.C. (2005). Cigarette health warnings benefit smokers who want to quit the habit: results from the Dutch Continuous Survey of Smoking Habits *The European Journal of Public Health* 2005 15(4):389-392; doi:10.1093/eurpub/ckio61.
- Wingood GM, DiClemente RJ, Bernhardt JM, et al. (2003). A prospective study of exposure to rap music videos and African American female adolescents' health. *Am J Public Health* 98:437– 9.
- Wise, R.A. (2004) Dopamine, learning and motivation. *Nature Review Neuroscience*, 5, 483-494.
- World Health Organization (2004). *Neuroscience of psychoactive substance use and dependence*. Geneva: World Health Organization.
- World Health Organization (2007). Report of Expert Committee. [http://www.who.int/substance\\_abuse/activities/expert\\_comm\\_alcohol\\_2nd\\_report.pdf](http://www.who.int/substance_abuse/activities/expert_comm_alcohol_2nd_report.pdf)
- World Health Organization (2007). WHO Expert Committee on Problems Related to Alcohol Consumption [http://www.who.int/substance\\_abuse/expert\\_committee\\_alcohol/en/index.html](http://www.who.int/substance_abuse/expert_committee_alcohol/en/index.html). Accessed June 2007.
- Wyllie A, Zhang JF, Casswell S. (1998a). Responses to televised alcohol advertisements associated with drinking behaviour of 10-17-year-olds. *Addiction*. 93(3):361–71.
- Wyllie A., Waa A. and Zhang J.F. (1996) *Alcohol and Moderation Advertising Expenditure and Exposure*: 1996. Auckland, New Zealand: University of Auckland.
- Wyllie, A.; Zhang, J.F.; and Casswell, S. (1998b) Positive responses to televised beer advertisements associated with drinking and problems reported by 18- to 29-year-olds. *Addiction* 93(5):749–760.

















