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REVIEW

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Alcohol research and the alcoholic beverage industry: issues, concerns and conflicts of interest

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ABSTRACT

Aims Using terms of justification such as 'corporate social responsibility' and 'partnerships with the public health community', the alcoholic beverage industry (mainly large producers, trade associations and 'social aspects' organizations) funds a variety of scientific activities that involve or overlap with the work of independent scientists. The aim of this paper is to evaluate the ethical, professional and scientific challenges that have emerged from industry involvement in alcohol science. **Method** Source material came from an extensive review of organizational websites, newspaper articles, journal papers, letters to the editor, editorials, books, book chapters and unpublished documents. **Results** Industry involvement in alcohol science was identified in seven areas: (i) sponsorship of research funding organizations; (ii) direct financing of university-based scientists and centers; (iii) studies conducted through contract research organizations; (iv) research conducted by trade organizations and social aspects/public relations organizations; (v) efforts to influence public perceptions of research, research findings and alcohol policies; (vi) publication of scientific documents and support of scientific journals; and (vii) sponsorship of scientific conferences and presentations at conferences. **Conclusion** While industry involvement in research activities is increasing, it constitutes currently a rather small direct investment in scientific research, one that is unlikely to contribute to alcohol science, lead to scientific breakthroughs or reduce the burden of alcohol-related illness. At best, the scientific activities funded by the alcoholic beverage industry provide financial support and small consulting fees for basic and behavioral scientists engaged in alcohol research; at worst, the industry's scientific activities confuse public discussion of health issues and policy options, raise questions about the objectivity of industry-supported alcohol scientists and provide industry with a convenient way to demonstrate 'corporate responsibility' in its attempts to avoid taxation and regulation.

Keywords alcohol, research, alcohol industry, conflict of interest, social aspect organizations, alcohol policy, ICAP.

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STATEMENT OF THE ISSUE

Current trends suggest increasing involvement of the alcoholic beverage industry in scientific research in ways that go beyond investigating the product safety and consumer marketing [1]. Using terms such as 'corporate citizenship', 'corporate social responsibility' and 'partnerships with the public health community', the industry (mainly large producers, trade associations and 'social aspects' organizations) funds a variety of scientific activities such as meetings of investigators, research programs and scientific publications. In addition to the potential for conflicts of interest, such activities may affect the objectivity of independent scientists and the integrity of science, as has been demonstrated in relation to the influence of the pharmaceutical, tobacco and other industries [2–5].

Another risk is the use of science and scientists for public relations purposes to demonstrate that industry philanthropy toward science is a responsible way to deal with the societal problems resulting from alcohol misuse. For example, the Coors Brewing Company's website (http://www.coors.com/community/industry.asp) states that they 'have dedicated hundreds of millions of dollars

in the past decade toward research, education and prevention programs' as part of their attempt 'to be part of the solution to reducing underage drinking'. The website further states that 'Coors has committed to support sound, scientific research and ensure (*sic*) that the results are made available to the public health profession', listing the Alcoholic Beverage Medical Research Foundation (ABMRF) and the International Center for Alcohol Policies (ICAP) as 'organizations in their basic and applied research missions' that Coors supports. Similarly, the US Beer Institute, citing ABMRF and ICAP among other programs and organizations, claims on its website (http://www.beerinstitute.org) that 'we have dedicated hundreds of millions of dollars in the last decade toward research, education and prevention programs'.

Given the increasing interest of the alcoholic beverage industry in scientific activities, it is reasonable to ask how extensive these activities are, where they are occurring, what form they take and what the risks are for science, scientists and public health. After first providing an overview of the alcoholic beverage industry, a variety of industry activities are described that exemplify the current relationships between the industry and alcohol science. Finally, the paper provides an evaluation of the ethical, professional and scientific challenges that have emerged from industry involvement in alcohol science.

SCIENCE AND INDUSTRY: A BRIEF OVERVIEW

During the latter part of the 20th century there was a rapid growth in the number of professional scientists and academic institutions involved in the study of alcohol, alcohol dependence and alcohol-related problems [6]. The current world-wide infrastructure of alcohol science includes numerous governmental research funding sources, more than 85 specialized scholarly scientific journals [7], scores of professional societies, more than 150 research centers and thousands of scientists. The scientific community is diverse, ranging from basic scientists investigating the genetic mechanisms involved in alcohol dependence to social scientists evaluating the effectiveness of different alcohol prevention policies. Most alcohol scientists work in academic or clinical settings where, until recently, there has been a minimum of contact with organizations connected with the alcoholic beverage industry.

As noted in a recent analysis sponsored by the American Medical Association [8], the alcohol industry is a powerful multi-national business complex that includes not only the producers of beer, wine and distilled spirits, but also a large network of distributors, wholesalers and related industries, such as hotels, restaurants, bars and advertisers.

In addition to the alcohol producers themselves, the industry's interests have been promoted traditionally by trade associations which, according to one definition [9], 'are organizations that principally deal with issues of commerce such as taxes and advertising of alcohol beverages'. The activities of these organizations include information dissemination, collection of industry statistics, legislative and regulatory advocacy, education programs, media relations and scientific research. Because each trade association has a different mission and constituency, it may be involved in only a small number of these activities.

In contrast to trade associations, in the past 15 years there has been a steady increase in the number of 'social aspects' organizations world-wide that are funded by the alcoholic beverage industry to manage issues that may be detrimental to its interests, particularly in areas that overlap with public health [10]. At the time of this writing more than 30 such organizations have been identified [11]. According to Anderson ([10], p. 1377), these organizations manage industry issues 'by attempting to influence the alcohol policies of national and international governmental organizations; becoming members of relevant non-alcohol specific organizations and committees to broaden policy influence and respectability; recruiting scientists, hosting conferences and promoting high profile publications;. . . . and preparing and promoting consensus statements and codes of practice'. In addition to national organizations such as the Portman Group in the United Kingdom, there are also international coordinating bodies, such as the International Center for Alcohol Policies, which has a global purview and is supported by an international consortium of alcohol producers.

According to one definition [9], social aspects organizations are distinguished from trade associations by the fact that their interests generally cut across the wine, beer and spirits sectors of the industry, and 'they deal exclusively with issues concerned with the responsible consumption of alcoholic beverages and not with trade promotion issues' (p. 19). Thus a key issue in the definition of social aspects organizations is whether they are devoted primarily to benefiting the alcoholic beverage industry or the public good. To the extent that both types of activity may be involved in their mission, in this paper the term 'social aspects/public relations organizations' (SAPROs) will be used in referring to their activities. Public relations is included as a primary characteristic to the extent that these organizations are funded to present industry-favorable information to the public and to advance industry-favorable policies at national and international levels.

Given the diverse nature of the alcoholic beverage industry and the organizations it supports, it cannot be

assumed that all these organizations act in concert with the same goals and intentions. Often the various actors operate independently or even competitively, and they certainly do not represent a monolithic approach to the use of science and the promotion of public health interests. Nevertheless, it will be the position of this paper that there are common interests across the spectrum of industry organizations, and that it is not only possible, but also useful to study the organizational behavior of individual elements to determine whether consistent patterns can be discerned. To that end, this paper has identified seven areas where industry interests interact with alcohol science: (i) industry sponsorship of research funding organizations; (ii) direct financing of university-based scientists and centers; (iii) research conducted through contract research organizations; (iv) research conducted by trade organizations and SAPROs; (v) publication of scientific documents and support of scientific journals; (vi) sponsorship of scientific conferences and presentations at scientific conferences; and (vii) efforts to influence public perceptions of research, research findings and alcohol policies. The source material for this paper came from an extensive review of organizational websites, newspaper articles, journal papers, letters to the editor, editorials, books, book chapters and unpublished documents.

SPONSORSHIP OF INDEPENDENT RESEARCH FUNDING ORGANIZATIONS

As shown in Table 1, there are at least three organizations funded predominantly by industry sources for the primary purpose of conducting scientific research on alcohol: the European Research Advisory Board (ERAB), the ABMRF and the Institut de Recherches Scientifiques sur les Boissons (IREB). These organizations consist generally of a board of trustees that includes industry representatives, a scientific board charged with grant reviews and awards and a secretariat that administers the research funds to independent scientists.

ERAB was established in 2003 to fund biomedical and psychosocial research on beer and alcohol. It is managed through a Board of Directors, which consists of people drawn from business (including the beer industry), public relations, the legal profession, banking and the medical sciences. The Board of Directors oversees an Advisory Board which is responsible for soliciting grant applications, arranging grant reviews and awarding of grants. This group consists currently of academics with expertise in epidemiology, liver disease, genetics, heart disease, social science and clinical treatment of alcohol problems. According to their website (http://www.erab.org), applications are 'independently externally peer reviewed', with a funding limit of €120 000 for a 2-year grant. Currently funded projects include research on genetics, chronic disease and protective effects of alcohol.

The ABMRF describes itself as 'a nonprofit independent research organization that provides support for scientific studies on the use and prevention of misuse of alcohol'. Established in 1982 and supported by the brewing industries of the United States and Canada, ABMRF funds biomedical and psychosocial research on alcohol through small grants, some of which are intended for young investigators. Industry members hold minority seats on the ABMRF Board of Trustees but do not participate in the grant selection process. All grants are peer-reviewed by one of two advisory councils composed of senior alcohol researchers recruited from a broad spectrum of disciplines and universities. Advisory Council members receive consulting fees and are encouraged to fraternize with senior industry executives at the Foundation's International Medical Advisory Group con-

Table 1 Research grant programs sponsored by the alcoholic beverage industry.

Name of organization	*ERAB*	*ABMRF*	*IREB*
Location	Brussels (BE)	Baltimore (USA)	Paris (FR)
Year established	2003	1982	1971
Funders	Brewers of Europe	Brewing industries of US and Canada	Major producers of wine and spirits
Types of research	Biomedical, psychosocial research on beer	Biomedical, psychosocial research on alcohol	Biomedical, psychosocial research on alcohol
Maximum amount/	€120 000	$50 000/year	Average of €7000/year
Duration of funding	2 years	2 years	1 year
Grants per year	5	20	7
Application length	2 pages	7 pages	1–2 pages
Other activities	Travel grants, Awards for young researchers	Research conferences	Documentation, research conferences abstracting service

ABMRF: Alcoholic Beverage Medical Research Foundation; ERAB: European Research Advisory Board; IREB: Institut de Recherches Scientifiques sur les Boissons.

ference. The Foundation's research priorities include drinking patterns, mechanisms underlying the effects of alcohol, the etiology of alcohol misuse and effects of moderate alcohol use on health and wellbeing.

The IREB was established in Paris in 1971. The Institute's funds come from major European producers of wine and distilled spirits, and are used to support biomedical and psychosocial research on alcohol. Grant awards are made by a Scientific Committee composed of academics and other researchers with expertise in biology, biochemistry, liver disease, neurology, psychiatry, epidemiology and the social sciences. In addition to investigator-initiated grant applications, IREB also contracts directly with research groups to conduct studies determined by the Institute, such as population surveys to estimate per capita consumption in France and school surveys to estimate alcohol misuse. It also operates a documentation center, provides bibliographic information, sponsors scientific conferences and publishes books, reports and articles.

Comment

Although the operations of these ostensibly independent research organizations are considered by some to be a model of the way industry should contribute to alcohol science, there are several issues that require further analysis. First, to what extent are the scientific advisory boards appointed by the organizations' directors free to approve or reject applications, and to assure that the research agenda is not biased in favor of industry priorities? There is some evidence, for example, that similar 'independent' research funding organizations set up by the tobacco industry have had a strong industry influence over the grant approval process and the types of research conducted [4,12]. IREB commissions its own studies in addition to funding investigator-initiated projects, thereby increasing the possibility that industry-favorable topics are being promoted.

Secondly, does a scientist's membership on the Advisory Board of an industry-established research organization create real or apparent conflict of interest? It is possible, for example, that a scientist's objectivity might be compromised by receipt of the honoraria and travel funds involved, and the opportunities to fraternize with industry executives at international meetings.

Thirdly, to what extent is the research sponsored by these organizations likely to contribute to scientific advancement or public health? The application process of all three organizations listed in Table 1 requires only a few pages of detail, in contrast to the extensive application process demanded by governmental funding agencies that support alcohol research in Europe and America. Moreover, the grant awards tend to be small and the investigators who receive funds are often inexperienced and at an early stage of their medical or scientific careers (e.g. ABMRF). It is notable that the low overhead rates paid by organizations such as ABMRF (15%) are unlikely to even cover institutional expenses necessary to sustain research scientists. This means that these grants must be subsidized from other institutional sources. A related issue is the possible bias introduced by the alcohol industry's ability to set the research agenda. In addition to research on the causes and consequences of alcohol-related problems, each of these organizations attempts specifically to fund research on 'industry-favorable' topics such as the health benefits of moderate drinking. In the case of tobacco, industry-sponsored research has often been cited to argue for delays in government regulations dealing with exposure of vulnerable populations to second-hand smoke [12]. In the case of alcohol, research on the health benefits of drinking has been used to develop new product lines and marketing strategies by the wine and beer industries [13]. Other than what is described on the websites of these organizations, it is difficult to determine what topics they will not fund, and whether their priorities bias in any way the research agenda toward industry-favorable topics.

Finally, to what extent is the relatively small amount of funding for alcohol research, much of it devoted to esoteric biological or clinical issues that have little relevance to public health, merely a means for the industry to claim that it is involved in corporate philanthropy that is addressing alcohol-related problems? More than a decade ago, Lemmens [14] estimated that industry funding supported only a small percentage of Dutch alcohol research (less than 5%), but a more significant proportion in the United Kingdom (approximately 20%). ABMRF's research budget is less than 1% of the research support provided by the US National Institute on Alcohol Abuse and Alcoholism, the primary US research funding agency. The amounts given by industry supported research funding organizations are thus quite small when compared to government support in many countries, thereby making industry representations of its largesse exaggerated, if not disingenuous.

DIRECT SUPPORT PROVIDED TO UNIVERSITY-BASED SCIENTISTS

There have been several instances where individual alcohol producers or SAPROs provide direct support to university-based scientists engaged in alcohol research. In the 1990s, the Portman Group supported the positions of several researchers affiliated with the Alcohol Research Group at the University of Edinburgh [1].

Scotch whisky sources also provided core funds, which were given without restrictions.

In the United States, the Ernest Gallo Clinic and Research Center was established in 1980 at the University of California to study basic neuroscience and the effects of alcohol and drugs on the brain. The Center, funded initially through a reported $6.5 million endowment from wine producer Ernest Gallo, now has a staff of more than 150 employees. The Center is evaluated annually by a Scientific Advisory Board consisting of established biomedical scientists.

In 2002, Anheuser-Busch provided a $105 000 grant to open a social norms research center at Northern Illinois University, and subsequently contributed nearly $400 000 to social norms programs operating at seven US universities [8].

In 2006, Diageo Ireland, part of Diageo plc, the world's largest producer and distributor of alcoholic beverages, gave €1.5 million to the University College Dublin's Geary Institute [15]. The grant provides salary for several faculty, graduate students and support staff engaged in a 3-year study of health risk behavior in relation to hazardous drinking among young adults in Ireland.

Comment

Direct support of independent scientists provided by alcohol producers and SAPROs is not extensive, considering that the great majority of alcohol scientists and research centers receive no research support from industry sources. Nevertheless, industry funding of university-based scientists has become a contentious issue at some universities because of the potential for conflict of interest in areas where public health is likely to be affected. A number of universities, for example, have adopted policies to refuse funding from the tobacco industry [12,16]. It is interesting to note that while the Gallo Center involves a large number of career alcohol scientists, some of the other research grants, such as the Diageo funding of the Geary Institute, have been given to social scientists who have little experience in alcohol research [15]. Risks to science and public health include shaping the research agenda by influencing the selection of industry-favorable topics, pressures to report industry-favorable findings to maximize future funding and use of funding initiatives to project an image of 'corporate responsibility', when such funding contributes little to the advancement of alcohol science. In the case of the University College Dublin funding, Diageo's largesse seems to have had less to do with the advancement of science than with the avoidance of regulation. As explained by Diageo's global Chief Executive Paul Walsh (quoted from the *Irish Times* [17]), soon after the Geary Institute funding was announced: 'the company did not want problems with binge drinking to lead governments to place higher taxes on its products and thus eat into revenues'.

RESEARCH CONDUCTED BY INDUSTRY SCIENTISTS AND CONTRACT RESEARCH ORGANIZATIONS

Little is known about the internal research conducted by the alcoholic beverage industry in relation to the design, packaging, safety and marketing of its products, or research conducted by contract research organizations, marketing agencies and other organizations that is commissioned and paid for by industry sources. Examples include marketing studies, advertising research, analysis of sales data and testing of new product lines. One contract research organization that provides technical information and research services to 90 companies connected with the beer industry is Brewing Research International (BRi). Their services cover new brand development, sensory analysis, flavor research, safety issues and studies of work performance at different breweries. For example, BRi's Health Benefits Programme distributes to member companies research findings and other information relevant to the benefits of beer drinking and the identification of ingredients in malt products that affect safety and health.

BRi also conducts empirical research. One project provides information to member companies about the 'drinkability' of their products in relation to different population segments. According to an announcement posted on their website in 2006 (http://www.brewingresearch.co.uk), the research is designed to 'indicate which products are drunk most by people. The brewer can use this information to alter his/her products correspondingly or create new products which the consumer will drink in large quantities but which do not yet exist on the market'. Products submitted by member companies are investigated using a combination of consumer assessments, sensory evaluation and analysis of key 'drinkability' factors.

Another project, described in Box 1, was advertised on the BRi website as a syndicated study wherein each participating customer obtains access to both the general study findings as well as 'specific customized information relating to their company's brands whilst retaining competitor brand confidentiality'. This study was designed to involve 200 male and female drinkers aged 18–25 years in an evaluation of ready-to-drink products, which are typically mixed alcoholic drinks and malt liquor beverages that are packaged for immediate consumption. The aim was to study whether 'branding' or the beverage's sensory characteristics are responsible for the appeal of products that introduce young consumers to alcoholic beverages.

Box 1 A syndicated study of the ready-to-drink (RTD) market to understand the key drivers of consumer acceptance (quoted from http://www.brewingresearch.co.uk, 11 September2006).

Since their entry into the UK alcoholic drinks market in the 1980s RTDs have effected significant changes, particularly to the traditional beer and spirit sectors of the market. Where once potential young drinkers graduated from cider to beer and then onto spirits, now RTDs, along with lager, are the launching pad for most young people's drinking career. But what is it that makes these drinks so appealing? Is it all to do with branding or are there properties about the liquids that attract the young? What are the key sensory drivers of RTDs that determine whether a product achieves maximum consumer appeal? What is the effect of branding? And what is more important, branding or the liquid?

Whether you are a producer of RTDs or are in some way affected by their significant impact on the market you need to have answers to the above. Those companies already in the market must work hard to maintain a product edge and new entrants cannot afford to get it wrong. This study which will include all the major players in the RTD market and will cover:

1 The production of descriptive sensory profiles 'fingerprints' of all the products in the study.
2 A sensory map showing the relationships of all the products in the market and the sensory attributes which push them together or pull them apart.
3 Quantitative aggregated data showing the mean scores for acceptance of each product both blind (as a liquid) and branded (packaged and with promotional material).
4 Preference maps showing the extent to which consumers cluster in terms of their preference (do they all like the same products?).
5 Preference maps correlated with sensory data to show which sensory attributes are driving the market or particular sectors of the market.
6 Target sheets will be produced for each participant in the study to show improve/optimize his formulation.
7 The extent to which branding effects consumer preferences and a preference map of branded product.

Another example of a contract research and service organization is the Australian Wine Research Institute, which was established in 1955 by funds provided by the Australian grape-growers and winemakers. According to its website (http://www.awri.com.au), the Institute's mission is 'to advance the competitive edge of the Australian wine industry through the delivery of world class research, development, extension and service activities'. To accomplish these ends, the Institute undertakes research into wine composition and sensory characteristics, engages in 'industry development and support' and promotes 'transferring research outcomes to practice'.

Comment

Little is known about the internal research conducted by the alcoholic beverage industry and the contract research organizations that perform commissioned and syndicated studies for individual companies. Because this kind of research is often used to enhance the competitiveness of a particular industry or company, the information is not shared with the public, the scientific community or public health professionals. Although some types of internal research have no apparent relevance to public health, others (e.g. sensory characteristics and 'drinkability' of beverages designed for young adults) may have implications for the targeting of young adults who are more likely to engage in heavy episodic drinking. In the case of tobacco, previously secret internal industry documents have revealed that independent analysis of research on sensory perception was used to inform product design for targeted segments of the cigarette market, including young adults [18–20]. Further examination of industry research agendas and expenditures as reported in shareholder reports and other documents seems warranted.

RESEARCH CONDUCTED BY TRADE ORGANIZATIONS AND SAPROs

Some research has been commissioned by trade organizations for public relations purposes. For example, the Canadian Brewers commissioned a poll on the subject of public perceptions of beer and health. As reported on the Canadian Broadcasting Corporation radio program, *Marketplace*, the poll was conducted by a public relations firm and was designed to be reported in the public media [21]. A news release about the study included positive comments from Professor Lois Ferguson, a dietician, about the health benefits of beer. The broadcast did not provide information about her role as a paid industry consultant. In Sweden, a trade association commissioned a report that was critical of the way that alcohol importation statistics were collected by Stockholm University's Center for Research on Alcohol and Drugs. The report was released at a press conference and the press release was used to raise questions about the State Monopoly, which had been criticized by the alcohol industry for its attempts to limit the availability of alcohol in Sweden [22].

Other research has been conducted by SAPROs for the ostensible purpose of providing scientific information to the 'public health community'. For example, ICAP has

engaged in several empirical studies and has presented its findings at scientific meetings. In one case, an investigator [9] working for ICAP published a paper in the *Journal of Alcohol and Drug Education* entitled: 'A comparative analysis of alcohol education programs sponsored by the beverage alcohol industry'. The paper compared the results of an international survey [23], conducted in 1984 by the current ICAP Director Marcus Grant to those of a new survey conducted in 1996. Both surveys were sent to trade associations and SAPROs in more than 30 countries requesting information about their support of alcohol education programs that deal with 'responsible alcohol consumption'. After summarizing the results of research indicating that school and college educational interventions have not been shown to be effective, the author concluded that the results of the present research show 'industry sponsored bodies are actively participating in preventing the misuse of their products' (p. 31) because of their alcohol education programs. Nowhere in the publication is there an acknowledgement that ICAP, which is listed as the author's only institutional affiliation, is supported by the alcoholic beverage industry.

Another example of empirical research conducted by an industry-sponsored SAPRO is an international survey of 114 national level health authorities to ask about their views on alcohol policies and 'partnerships' with the alcohol industry. The results were presented at the 2003 meeting of the International Council on Alcohol and Addiction (ICAA) by Marjana Martinic PhD, an employee of ICAP. Based on a 42% response rate, it was concluded that public education on alcohol was a priority area for 'partnerships' with the alcohol industry, especially in the 'emerging' economies of the developing world.

Comment

Only a few isolated studies were identified that give any indication that trade associations and SAPROs are involved actively in scientific research. The empirical research conducted by industry-supported organizations such as ICAP tends to be of poor methodological quality and is directed mainly at reinforcing industry favorable positions such as the health benefits of alcohol, the growth of industry involvement in alcohol education activities and the need for partnerships between industry interests and public health professionals. The limitations of the second ICAP study described above were summarized in an paper by Babor & Xuan [24], who noted that the ICAP survey was similar in form and content to one conducted at about the same time by the World Health Organization [25]. In a comparison of the two reports [24], it was found that prevalence estimates for a variety of alcohol policies reported by the survey respondents were significantly lower in the ICAP study, suggesting possible sampling bias or poor survey design. Whereas the WHO report was appropriately cautious in the conclusions drawn, the ICAP survey was faulted for its data analyses, statistical reporting and interpretation of the data. In particular, the ICAP report claimed that public education on alcohol was identified by 70% of respondents in 'emerging' market countries, when this item was endorsed by only 38% of the sample, as indicated by an independent re-analysis of the data. Like the Houghton [9] paper, the ICAP report presents conclusions that are inconsistent with its own data or unwarranted because of faulty survey methodology, and no ethical approval of either study is reported. In addition, the Houghton study failed to acknowledge its funding source, which violates commonly accepted conflict of interest policies regarding scientific publications.

PUBLICATION OF SCIENTIFIC DOCUMENTS AND SUPPORT OF SCIENTIFIC JOURNALS

Many alcohol industry trade organizations and SAPROs distribute health information about the risks and benefits of alcohol use. Some organizations produce scholarly publications, most often in the form of edited volumes that contain chapters on topics addressing a particular medical, biological or policy theme. The ostensible purpose of these publications is to inform policymakers, scientists and the general public about the latest developments in alcohol research, demonstrate corporate responsibility and contribute to the public health mission of the sponsoring organization. Other scientific publications produced by SAPROs and trade associations include literature reviews, short reports and abstracts.

One such publication was the book *Health Issues Related to Alcohol Consumption* [26], which was published by the International Life Sciences Institute (ILSI Europe), an organization that is funded by the Food and Beverage Industry, including alcohol producers and SAPROs. No specific information was provided in the book about who paid for the publication, how much the authors were paid and whether the authors had any conflict of interest in writing the chapters. It was revealed subsequently that the book was supported with funds from the alcoholic beverage industry [27]. A declaration of funding sources was similarly absent from an earlier version of the book [28]. Although ILSI does not reveal the specific activities that its corporate members sponsor, that does not restrict the sponsors from claiming credit for their support of scientific publications. The first chapter of one of the abovementioned books was featured in a report issued by the Amsterdam Group, an industry public relations organization, which took credit for commissioning the book. Diageo, a major international distributor of alcoholic

beverages, stated on its website (http://www.diageo.com) that: 'As a member of the Alcohol Task Force of the International Life Sciences Institute Europe, we have co-funded a range of peer-reviewed research overviews and publications'.

Other examples of such publications include the books and reports published by ICAP, such as *Alcohol and Emerging Markets* [29], a book on alcohol use and problems in the developing countries. Other topics covered in ICAP books are the structure of the alcoholic beverage industry, corporate social responsibility, risks of alcohol consumption, illicit alcohol production, alcohol and pleasure and drinking patterns. The books tend to be co-authored or co-edited by a combination of ICAP staff and academics or administrators from other institutions. For example, *Drinking in Context: Patterns, Interventions, and Partnerships* [30] was written through a collaboration among four organizations: ICAP, the International Harm Reduction Association, the World Federation for Mental Health and IREB.

Other examples of industry-sponsored publication practices come from the Australian Wine Research Institute which, according to its website (http://www.awri.com.au), 'has published many papers on the topic of the relationship between the consumption of alcohol and the health of the human population'. Of the 43 papers listed on its website in 2006, five were published in peer-reviewed addiction science journals. The remaining articles were conference presentations, speeches and papers published in trade journals. Common topics include 'wine and health', the cardioprotective properties of wine, moderate alcohol consumption, alcohol as a risk factor in human disease and the health benefits of wine consumption. Most of the papers were authored or co-authored by three individuals: C. S. Stockley ($n = 29$), T. H. Lee ($n = 15$) and C. R. Delin ($n = 13$). Creina Stockley is listed as the Institute's Health and Regulatory Information Manager. Linkages for additional information listed on the Institute's website include the US Wine Institute, the Portman Group and several governmental agencies.

At least one scientific journal and, at one time, an abstracting service, have been supported by funds from the alcohol industry. The journal *Alcohol Research* is sponsored by the Foundation for Alcohol Research and TNO Nutrition and Food Research, a Dutch research organization. The purpose of the journal is to provide 'a balanced view' of the risks and benefits of alcohol consumption, including moderate alcohol use. In addition, for more than a decade (1982–2001) the Alcoholic Beverage Medical Research Foundation published abstracts of current alcohol research. The abstracts were selected on the basis of the ABMRF mission, which emphasized at that time the benefits of moderate drinking. In 1995 the editor of the journal *Alcohol and Alcoholism* resigned in response to alleged pressure from its sponsor to reduce the number of papers dealing with the harmful effects of alcohol [31]. The sponsor was the Robertson Trust, a UK charity set up by the whisky industry.

Comment

As these examples suggest, scientific publications produced by the alcoholic beverage industry could pose a threat to the integrity of science and the dissemination of accurate information about the health consequences of alcohol. First, the alcoholic beverage industry, acting through a third-party public relations organization (the Amsterdam Group), was able to use one book's introduction, if not its contents, as part of its ongoing activities to counteract public health measures directed at the prevention of alcohol problems in Europe [27].

Secondly, these documents have at times been used to confuse the issues in relation to the evidence base for effective alcohol policies. One interesting aspect of some of the publications sponsored by SAPROs is the curious timing of documents that resemble publications by scientific and health organizations. For example, ICAP issued a report on the 'Structure of the Beverage Alcohol Industry' [11] not long after the American Medical Association [8] published a critical analysis of the same industry. Similarly, ICAP issued a series of reports on alcohol policy ('The Blue Book' as well as *Drinking in Context: Patterns, Interventions, and Partnerships* [30]) after an international group of scientists published a policy analysis entitled *Alcohol: No Ordinary Commodity* [32]. Also, ICAP conducted an international survey of health authorities at about the same time that a similar survey was being conducted by the World Health Organization [24]. Regardless of whether the timing of these industry-sponsored activities is deliberate or coincidental, their net effect is to provide the public and policymakers with industry-favorable views of public health issues that are often at variance with those of independent scientists and public health professionals. For example, the Stimson *et al.* book [30] has been criticized for its emphasis on individual-level harm reduction strategies while minimizing or ignoring evidence-based alcohol control policies [33,34].

Thirdly, in some cases the general public and the scientific community are not given adequate information about industry involvement in the commissioning and dissemination of scientific information. For example, the fact that many of the early ICAP books were mailed without charge to a large list of constituents suggests that these books would not be competitive in the academic marketplace had they not been heavily subsidized.

In addition to the publication of scientific documents, there are several reasons why industry support of scien-

tific journals and abstracting services may be detrimental to the integrity of science. First, the industry sponsors may put direct or indirect pressure on journal editors to publish papers on industry-favorable positions, as reported in the case of *Alcohol and Alcoholism*. Secondly, the selection of articles and abstracts based on industry priorities may distort the scientific agenda away from research questions that are in the best interests of public health.

SPONSORSHIP OF SCIENTIFIC CONFERENCES AND PRESENTATIONS AT SCIENTIFIC CONFERENCES

In recent years representatives of SAPROs have been included on the scientific programs of professional organizations. For example, the annual meeting of the Research Society on Alcoholism in 2001 featured a symposium organized by ICAP, which offered to pay travel expenses and conference registration fees to all presenters [35]. The symposium explored the relationship between the private sector and the research community. Another example is the participation of ICAP staff at the annual meetings of the International Council on Alcohol and Addictions (ICAA) where, on some occasions, research reports have been presented [24]. In the case of ICAA, the Director of ICAP was elected to be a member of the organization's Board of Directors, but has since resigned.

Another way in which industry interests are represented at scientific meetings is through the sponsorship of hospitality hours where free alcohol is provided, the renting of exhibit space at professional and scientific meetings where free publications are distributed and the sponsorship of speakers at plenary sessions [36].

In addition to presentations at meetings, industry support through SAPROs and grant-making organizations has been used to organize scientific conferences. As noted above, ABMRF, ERAB and IREB all sponsor scientific meetings that bring together organizational representatives, including industry executives, and alcohol scientists to review research conducted by grantees and by invited presenters. ICAP has sponsored several scientific conferences, one on the positive effects of alcohol that was organized around the theme 'Prescription for Pleasure' and another on the benefits of moderate drinking in relation to coronary heart disease [37]. ICAP has also cosponsored conferences on alcohol policy in Brazil and South Africa and has developed links with the International Harm Reduction Association, which runs an annual conference. Similarly, a scientific conference and subsequent edited volume [38] on the subject of binge drinking were funded in Ireland by the Advertising Information Group of Brussels, which is supported in part by the alcoholic beverage industry.

Comment

Although these activities may appear to be innocuous, there is increasing evidence [3] that even small gifts, honoraria, travel support and industry-paid hospitality in the form of food and drink can influence professional judgement and bias research results. At an ICAA conference in Glasgow, UK, there were complaints about the prominence given to hospitality sponsors from the alcoholic beverage industry [39]. Similar concerns have been raised about industry representatives at an annual meeting of the Research Society on Alcoholism [36]. Whereas the discussion of public health issues in relation to the alcoholic beverage industry may have educational value for alcohol research professionals, there is a risk of bias when the agenda for such discussions is influenced by an industry stakeholder such as ICAP, which has an obvious conflict of interest. It is interesting to note that when ICAP's sponsorship of a conference on heart disease was acknowledged in the conference proceedings [37], it was justified on the basis of the 'Dublin Principles', [40], a set of ethical guidelines drafted with the financial support of ICAP.

Although the direct support provided by industry sources may be obvious in some cases, in other cases it is not declared or is relatively obscure (e.g. [38]); and when research findings are presented by SAPRO representatives at scientific meetings, it is unlikely that the research has undergone appropriate ethical and scientific review [24]. A final issue is the extent to which university-based public health researchers are invited to meetings with industry-supported investigators in part to legitimize the industry's 'partnership' activities. In some cases [41] researchers have objected to being listed as 'stakeholders' after participating in meetings hosted by industry-funded organizations.

EFFORTS TO INFLUENCE PUBLIC PERCEPTIONS OF RESEARCH, RESEARCH FINDINGS AND ALCOHOL POLICIES

As noted in previous sections of this paper, some trade organizations and SAPROs engage in media advocacy, public relations and information dissemination in relation to scientific issues. They may also nominate representatives to sit on governmental advisory counsels charged with implementing alcohol policies, or on research review committees. Such activities may serve to influence public perceptions of research, research findings and alcohol policies in ways that are favorable to industry interests regardless of their public health value.

The California Wine Institute, for example, represents the interests of 798 wineries and affiliated businesses to

support such activities as legislative and regulatory advocacy, international market development and scientific research. In one chart posted on the Institute's website, it was asserted that research has found that moderate alcohol use may be beneficial for the common cold, kidney stones, Parkinson's disease, pancreatic cancer and other conditions, without noting the caveats that are typically provided when research on these topics is reported in the scientific literature.

The Portman Group was established in 1989 by the UK's major alcohol producers to promote responsible drinking, prevent alcohol misuse and encourage responsible marketing. Since its inception, the Portman Group has been involved in several controversies that are related to the interface between science and industry. In one case, copies of a pre-publication manuscript of a book on alcohol policy sponsored by the World Health Organization [42] were circulated to selected academics who were offered large fees to write anonymous critiques of the book [1,43]. Another controversy involved the appointment of Jean Coussins, Chief Executive of the Portman Group, to the Alcohol Education and Research Council (AERC), which is both a public body and an independent charitable organization established to fund alcohol research and educational activities. The appointment was opposed vigorously in an editorial published in the journal *Addiction*, because Ms Coussins had an obvious conflict of interest in relation to alcohol research [44]. In another controversy, the Portman Group was criticized for its role in drafting an influential UK government report entitled 'A Harm Reduction Strategy for England' [45–48]. The critiques noted that certain alcohol control policies such as alcohol taxes and limits on availability tend to be opposed as prevention strategies by industry representatives, whereas they favor routinely ineffective policies such as school-based education.

In 2005 Anheuser-Busch, then the world's largest brewer, sponsored a program to convince medical journalists of the health benefits of beer and of Budweiser's new product lines, Budweiser Select and Michelob Ultra. The program consisted of lectures delivered by Meir Stampfer, an epidemiologist at the Harvard School of Public Health. Although Dr Stampfer claims that he received no remuneration for his lectures other than travel expenses, the Harvard School of Public Health received a donation of $150 000 in doctoral student scholarship funds [13] from the brewery.

In an instance of industry involvement in the interpretation of research findings a Bonn University Professor Emeritus, Reinhold Bergler, wrote an expert opinion on the subject of a report issued by the Swiss Institute for the Prevention of Alcohol and Drug Problems. The report was based on analyses published in two peer-reviewed scientific journals [49,50] showing that changes in Switzerland's liquor taxes resulted in a 40% increase in spirits consumption, which was most marked in young people. Professor Bergler, who is not an expert in the alcohol field, presented his critique at a press conference, which was followed by news reports quoting industry representatives in an obvious attempt to discredit the study [51]. It was disclosed subsequently that Professor Bergler's critique was commissioned by Groupement Suise des Spirituex de Marque, a Swiss alcohol trade organization.

Further, in April 2006 the Distilled Spirits Council of the United States (DISCUS), an alcohol industry trade organization, issued a press release criticizing a paper published that month in the *Archives of Pediatrics and Adolescent Medicine* [52]. Although the study was funded by the US National Institutes of Health after a vigorous peer-review process and the paper was subjected to peer review prior to being accepted by the journal, DISCUS claimed it had serious methodological flaws that called into question the conclusion that exposure to alcohol advertising is associated with increased alcohol use by young adults. Subsequent to the paper's publication two letters to the editor, written by retired academics Reginald Smart and Don E. Schultz, criticized the study on methodological grounds [53,54]. Both letter-writers acknowledged in conflict of interest statements that they had 'received funding from the Distilled Spirits Council'.

Comment

Industry-sponsored trade associations and SAPROs have, in some instances, tried to influence public perceptions of research and to discredit legitimate research conducted by alcohol scientists. While these examples are not numerous, they do bear a strong resemblance to anti-scientific activities conducted by other industries [2,5], such as the commissioning of industry-sponsored research and analysis to cast doubt on scientific findings, direct attacks on the integrity of scientists and the support of third-party organizations that act in favor of industry positions. The risk of industry attempts to influence public perceptions of alcohol science is that they can confuse public opinion about the health effects of alcohol, discredit independent and reputable scientists, damage the integrity of science and discourage or delay effective alcohol policies. For example, an analysis of California Wine Institute publications and its website [55] found that the Institute: (i) made exaggerated claims about the health benefits of alcohol and wine; (ii) regularly omitted the cautionary statements made by scientists whose studies it cited; and (iii) failed to mention the health risks of alcohol consumption.

CONCLUSIONS

In 1996 Babor, Edwards & Stockwell [56] wrote an editorial that noted the growing industry involvement in alcohol research and proposed a set of questions that needed to be answered before any conclusions could be drawn. Those questions are even more relevant today and can be used to summarize the issues raised in this paper.

What is the true current extent of industry involvement in research on alcohol and health issues?

This paper has documented a considerable number of cases illustrating industry involvement in research funding, sponsorship of independent scientists and in the editing and distribution of scientific publications. Nevertheless, the evidence suggests a rather small direct investment in scientific research, one that is unlikely to contribute to alcohol science, lead to scientific breakthroughs or reduce the enormous burden of alcohol-related illness. At best, the scientific activities supported by the alcoholic beverage industry provide financial support and small consulting fees for basic and behavioral scientists engaged in alcohol research; at worst, the industry's scientific activities confuse public discussion of health issues and policy options, raise questions about the objectivity of industry-supported alcohol scientists and provide industry with a convenient way to demonstrate 'corporate responsibility' in its attempts to avoid taxation and regulation. Little information is available to estimate the nature and extent of internal research that deals with marketing, product design, product safety, sensory appeal, market segmentation and other issues that could have an impact on public health. The examples of secret contract research reviewed in this paper suggest the need for answers to the following questions: how much is being spent by the alcoholic beverage industry on internal research and contract studies that are not released to the public or the scientific community? Does the research conform to international standards of the ethical uses of science? Are there appropriate safeguards against the use of the information gained to target vulnerable populations (e.g. adolescents, problem drinkers, women of childbearing age)? What has been learned by industry about the determinants of heavy alcohol consumption that might benefit the public health community?

Does the industry declare publicly the extent of its direct or indirect involvement in supporting, funding, sponsoring and subsidizing research activities?

In general, the involvement of the alcoholic beverage industry in various scientific activities, both through direct funding of its initiatives and through trade associations and SAPROs, seems to be transparent to most informed professionals, but there have been enough instances of undeclared conflicts of interest and crude attempts to manipulate public opinion to suggest that the major driving force for many industry scientific activities is economic self-interest. Why else would an industry-sponsored SAPRO, the Portman Group, attempt secretly to discredit a scholarly review of the scientific literature dealing with effective policies known to prevent alcohol-related problems [31,43,57]?

What is the proper role of social, behavioral and basic scientists *vis-à-vis* collaboration with the alcoholic beverage industry?

The examples reviewed in this paper suggest that alcohol scientists should be very wary about accepting research funding directly from the industry, its trade associations and SAPROs. Consulting arrangements wherein scientists are paid to critique the work of other scientists constitute a serious financial conflict of interest that is unlikely to benefit either science or the investigator. Similarly, acceptance of fees for writing book chapters, preparing background reports, attending industry-organized conferences and writing letters to the editor should be prefaced by careful consideration of the following questions: to what extent is the scientific activity actually designed to promote the commercial interests of the alcoholic beverage industry? Will the funding source be properly acknowledged?

Regarding funding obtained from organizations such as ABMRF and ERAB, this may be consistent with scientific and public health aims if the grant review process is independent, transparent and peer-reviewed. But alcohol scientists need to be careful that their objectivity and independence are not compromised by consulting fees, paid travel to meeting sites and opportunities to fraternize with industry executives. Young investigators in particular need to be attentive to the possibility that industry funding in many health areas is being contested on both ethical and scientific grounds [3,5]. Scientists whose research is misrepresented by industry trade associations and SAPROs should contest vigorously the use of scientific information to advance commercial aims.

Should alcohol scientists participate in industry-sponsored activities designed to promote dialogue and 'partnerships' in relation to public health issues?

Two approaches have been suggested to guide decision-making by independent scientists regarding collaboration with the alcoholic beverage industry. The first can be described as a 'hands-off' position whereby members of

the scientific community and their organizational sponsors refuse to engage in communication or collaboration with industry representatives. This position is based on the assumption that the industry's commercial interests are incompatible with the values and aims of public health in general and with health-related scientific research in particular. It is argued that some, if not many, industry representatives are either ignorant of alcohol science or openly opposed to many of its findings [1,50,58,59]. Whether by accident or design, the main effect of industry's recent cooperation with scientists and public health professionals may be to improve their corporate image with the public and with government policymakers [15].

The second approach can be considered collaborative to the extent that alcohol scientists are encouraged to engage in dialogue with industry representatives, accept industry funding for their research and participate as 'partners' in industry-funded scientific activities, such as the publication of books [35].

A third approach is based on the growing number of case studies, ethical reviews and documentary information pertaining not only to the alcohol industry, but also to similar industries that have an important stake in products that affect public health [2–5,59]. This approach argues that active collaboration with 'dangerous consumption' industries such as the alcoholic beverage industry contributes little to the advancement of science or public health. This approach avoids categorical recommendations to either allow or discourage relationships between science and industry in favor of a more nuanced set of guidelines that set forth conditions of cooperation between science and industry [1].

The fact that the industry proudly supports research and prevention activities is evidence that they recognize some responsibility for the damage caused by their products. The fact that governments use general tax revenues to conduct health research, provide treatment for alcohol problems and support prevention policies suggests that the alcoholic beverage industry should contribute to the public good in proportion to the damage caused by its products. However, with few exceptions, industry support of science tends to be self-serving, contributing little to the advancement of science. For this reason it would make sense for scientists to avoid professional contacts with trade associations, SAPROs and alcohol producers that have a record of questionable activities in relation to science.

More importantly, professional organizations and scientific journals have a role to play, not only in identifying conflict of interest situations but also in preventing them. Addiction specialty journals dealing with alcohol research should implement thorough conflict of interest declaration policies, including sanctions for authors who fail to report conflicts. Societies devoted to the advancement of addiction science should support a declaration of principles that identifies alcohol industry practices that create conflicts of interest, and provide guidance about the conditions under which collaboration with the alcoholic beverage industry is neither warranted nor advisable. Finally, there is a need for a central registry of conflict of interest information to save authors' time and effort in compiling conflict of interest (COI) statements. Such a registry could also be used for research purposes to monitor industry involvement in alcohol science and to conduct empirical research on the influence of funding sources on research findings.

Declaration of interest

None.

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