

Snus and health

Both in the scientific sphere and the public health debate, the relative health benefits of Swedish snus compared with cigarette smoking have been highlighted. On these pages, we have compiled information within the areas of snus and health, and on Sweden's unique relationship to tobacco consumption, which has received international attention as "the Swedish experience".

Harm reduction

The Tobacco harm reduction principle involves reducing the health risks faced by people who

口含菸 (snus) 與健康

瑞典口含菸 (snus) 相對於香菸所具有的健康好處，在科學界與公共衛生的討論中，都是各界關注的焦點。我們在此匯集各種口含菸 (snus) 及健康領域的資訊，並介紹瑞典獨特的菸品消費關係，也就是獲得國際關注的「瑞典經驗」。

減少危害

菸品減害原則包括讓無法或不想戒菸的吸菸者轉為使用口含菸 (snus) 這類的無煙菸草產品，以降低吸菸者所面對的健康風險。

cannot or do not want to quit

smoking by getting them to switch to a smokefree tobacco product, such as snus.

Research on snus

A summary is presented here of current research on the type of snus used in Sweden and the rest of the Nordic region.

Tobacco use in Sweden

Total tobacco consumption is as high in Sweden as in comparable countries, but Sweden nevertheless has the lowest smoke-related deaths, which is likely to be explained by the high consumption of snus. In the research sphere, this

口含菸 (snus) 的研究

我們在此簡述目前瑞典及其他北歐地區使用口含菸 (snus) 類型的相關研究。

瑞典的菸草使用情形

瑞典的總菸品消費量與同類國家相當，但瑞典卻擁有最低的吸菸相關死亡率，大量消費口含菸 (snus) 可能是其中的原因所在；這就是研究界所稱的「瑞典經驗」。

GothiaTek®

GothiaTek® 是瑞典火柴公司本身的品質標準，向消費者保證瑞典火柴公司的口含菸 (snus) 產品均獲得嚴密控管，從種植菸草開始，乃至於成品上市販售的所有

is referred to as “The Swedish Experience”.

GothiaTek®

GothiaTek®, Swedish Match’s own quality standard, is a guarantee that the consumer can always be sure that Swedish Match snus products are controlled and maintain the highest quality in all phases, from tobacco plants to the consumer.

Snus in the EU

The export of snus to other EU countries is currently banned and snus is a topical and controversial issue within the EU. The future of snus is still uncertain, but the most recent research (SCENIHR),

階段，都維持最高的品質。

歐盟的口含菸 (snus)

目前口含菸 (snus) 禁止出口至其他歐盟國家，而口含菸 (snus) 在歐盟當地則是具爭議性的問題。雖然口含菸 (snus) 的前景仍不明確，但根據歐盟執行委員會最近委任進行的研究報告 (SCENIHR)，則提供了正面的訊息。

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conducted on assignment by the EU
Commission, gives positive signals.

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Our standpoint	我們的立場
<p>The adverse health effects of tobacco use are primarily related to inhalation of smoke. Scientific data clearly demonstrate that the health risks associated with smokeless products in the Western world are significantly lower than those of cigarettes.</p>	<p>使用菸品對健康的不良影響主要與吸入煙霧有關。科學資料已清楚顯示，無煙菸品在西方國家的相關健康風險遠低於香菸。</p>
<p>Data from both Scandinavia and the US show that smokeless tobacco is used by many smokers for smoking cessation purposes. The Swedish experience is also that the availability of snus has contributed to less people taking up smoking. Swedish males have record low rates of tobacco-related disease although their overall rate of any tobacco-use is comparable to that of</p>	<p>不論是斯堪地那維亞半島(北歐)或美國的資料都顯示許多吸菸者為了戒菸而使用無煙菸品。瑞典經驗也是另一項實例，顯示供應口含菸 (snus) 有助於減少吸菸人口。雖然瑞典男性的整體菸品使用率與其他國家相當，但罹患菸草相關疾病的比例卻不高。</p>

other countries.	
<p>We are convinced that smokeless tobacco products manufactured according to Swedish Match's quality standards play an important role to achieve harm reduction, as has been demonstrated by several scientific studies. Smokeless tobacco provides a sensible alternative to cigarettes and other smoking products, foremost because it does not deliver toxic pyrolysis products. In addition, environmental tobacco smoke is not an issue with smokeless tobacco.</p>	<p>我們堅信依據瑞典火柴公司品質標準製造的無煙菸品，能夠扮演重要角色以協助達到減少危害的目標，目前已獲得多項科學研究證實。無煙菸品不會產生有毒的燃燒物質，因此是替代香菸及其他有煙菸品的合理選擇；此外，無煙菸品不會產生煙霧，因此也不會造成二手煙的問題。</p>
<p>We do not claim that our smokeless products could not have any adverse health effects. We recognize that tobacco use raises valid questions about nicotine dependence, and the role of</p>	<p>我們並非主張我們公司的無煙菸品完全沒有任何不良的健康影響。我們承認使用菸品確實會引起尼古丁依賴的問題，也瞭解尼古丁對特殊族群的影響，例如懷孕期間以及患有心血管疾病的</p>

nicotine in special populations such as during pregnancy and among patients with cardiovascular conditions.	病患。
<p>We believe that society needs to develop pragmatic and effective harm reduction strategies for the tobacco area to help reduce the adverse health, social and economic consequences of tobacco use.</p> <p>Since it is widely recognized that a “Tobacco-Free World” will not happen within a foreseeable future the primary goal of harm reduction should be to reduce the negative consequences of tobacco use without requiring total abstinence from nicotine. In such a strategy, Swedish Match’s smokeless products can play an important and constructive role.</p>	<p>我們認為社會需要針對菸品領域發展務實且有效的減害策略，以降低使用菸品對健康、社會及經濟所造成的不良影響。由於各界普遍認同無法在可預見的未來實現「無菸世界」，因此減害的主要目標就是要在無須完全戒除尼古丁的情況下，降低使用菸品的不良後果。</p> <p>在這樣的策略下，瑞典火柴公司的無煙產品能夠扮演具建設性的重要角色。</p>
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Harm reduction	減少危害
<ul style="list-style-type: none"> Cigarette smoking imposes a major public health burden on the world. 	<ul style="list-style-type: none"> 吸菸在全球造成重大的公共衛生負擔。
<ul style="list-style-type: none"> The tobacco harm reduction strategy entails that individuals who cannot or are not willing to give up smoking can reduce their health risks by switching to a smokefree tobacco product, such as snus. 	<ul style="list-style-type: none"> 根據菸草減害策略，個人若無法或不願意戒煙，可採用像口含菸 (snus) 這類的無煙菸草產品，以降低對自身的健康風險。
<ul style="list-style-type: none"> Swedish men smoke the least in Europe and they use snus. 	<ul style="list-style-type: none"> 瑞典男性在歐洲的吸菸比例最低且他們使用口含菸 (snus)。
<ul style="list-style-type: none"> The prevalence of lung cancer and oral cancer in Sweden is substantially lower than in other comparable countries. 	<ul style="list-style-type: none"> 瑞典的肺癌與口腔癌盛行率遠低於其他同類國家。
<ul style="list-style-type: none"> Numerous researchers have suggested that the low prevalence of smoking in Sweden is in part attributable to the use of snus. 	<ul style="list-style-type: none"> 已有非常多的研究人員表示，使用口含菸 (snus) 是瑞典吸菸率低的部分原因。
What is the tobacco harm reduction strategy?	何謂菸品減害策略？
The harmful effects of cigarette smoking	燃燒菸草是吸菸產生有害影響的主要原

<p>arise mainly through the burning of tobacco. The harm reduction approach is based on the recognition that the health hazards of cigarette smoking can largely be avoided by switching to smokefree sources of nicotine. This could be accomplished through either smokefree tobacco-based products (such as snus) or through nicotine-replacement products (such as patches or chewing gum). There is some evidence that smokers may be more likely to accept alternative tobacco products, and thus have greater success in quitting smoking, than with the nicotine-replacement products.</p>	<p>因。使用無煙的尼古丁來源，可避免大部分吸菸造成的健康危害，因此成為減害策略的理論基礎，無煙的菸草產品(如口含菸 (snus)) 或尼古丁的替代產品 (如貼片或口嚼錠) 都可做為無煙的尼古丁來源。某些證據顯示，吸菸者對替代菸草產品的接受度高於尼古丁替代產品，因此前者能提升戒菸的成功機率。</p>
<p>What is the impact of smoking on morbidity and mortality?</p>	<p>吸菸對發病率及死亡率的影響為何？</p>
<p>The health risks associated with cigarette</p>	<p>大家都相當清楚有關吸菸的健康風險，</p>

<p>smoking are well known and the associated costs are enormous. The World Health Organization (2006) reports that half of all people who smoke (currently about 650 million people) will eventually die from this habit. This has led to increased efforts to encourage smokers to quit. Despite this, the majority of cigarette smokers are either unable or unwilling to quit their habit.</p>	<p>而相關的成本也相當可觀。根據世界衛生組織在 2006 年提出的報告，所有吸菸人口（目前約為 6 億 5 千萬人）最終將有半數因吸菸而導致死亡，因此各界無不投入更多心力鼓勵吸菸者戒菸。儘管如此，大部分的吸菸者不是無法戒菸，就是不願意戒菸。</p>
<p>What evidence is there that the health risks associated with use of snus are lower than those associated with cigarette smoking?</p>	<p>有什麼證據顯示，使用口含菸 (snus) 的相關健康風險低於吸菸？</p>
<p>Based on observations from the "Swedish experience," it has commonly been accepted among researchers that the use of snus is less harmful than</p>	<p>依據「瑞典經驗」的觀察結果，研究人員已普遍接受使用口含菸 (snus) 的危害低於吸菸。</p>

smoking.	
<p>Among Swedish men, the rate of snus consumption exceeds the rate of cigarette consumption and the prevalence of lung cancer and oral cancer is also significantly lower. Several researchers (e.g. Foulds et al. 2003, Henningfield and Fagerström 2001, Rodu et al. 2003) have suggested that the low prevalence of smoking in Sweden is related to such factors as the use of snus.</p>	<p>瑞典男性使用口含菸 (snus) 的比率高於吸菸率，而肺癌與口腔癌的盛行率也明顯較低。多位研究人員 (例如 2003 年的 Foulds 等人、2001 年的 Henningfield 及 Fagerström、2003 年的 Rodu 等人) 都認為瑞典的低吸菸率，與使用口含菸 (snus) 這類的因素有關。</p>
<p>Recently, researchers have attempted to quantify the difference in risks associated with cigarette smoking and the use of snus. A quantitative analysis provided evidence that the health risks associated with snus are significantly lower than those associated with smoking for the following outcomes: lung cancer, oral</p>	<p>最近研究人員則嘗試量化吸菸與使用口含菸 (snus) 之間相關風險的差異。根據量化分析提供的證據，在下列各項結果中，口含菸 (snus) 的相關健康風險遠低於吸菸：肺癌、口腔癌、胃癌、心血管疾病，及所有原因死亡率(2005 年的 Roth 等人)。在專家小組提出的結論中，認為使用低亞硝酸胺無煙產品 (如</p>

<p>cancer, gastric cancer, cardiovascular disease, and all-cause mortality (Roth et al. 2005). An expert panel concluded that mortality associated with use of low-nitrosamine smokefree products (such as snus) is at least 90% lower than that associated with smoking (Levy et al. 2004).</p>	<p>口含菸 (snus)) 的相關死亡率，至少比吸菸低 90%(2004 年的 Levy 等人)。</p>
<p>What is the future for the tobacco harm reduction approach?</p>	<p>菸品減害法的前景為何？</p>
<p>It is undoubtedly an area that will continue to be controversial. However, many influential researchers believe that it would be unethical not to continue exploring the use of smokefree tobacco products as an alternative to cigarettes (Martinet et al. 2006). They note the importance of pursuing this issue in a</p>	<p>菸草減害無疑將持續引起各界爭議，不過許多舉足輕重的研究人員皆認為，若停止研究使用無煙菸草產品取代香菸的可能性，是不道德的作法 (2006 年的 Martinet 等人)。他們體認到的重要關鍵，就是要以科學方法追蹤本問題，並考量上述所有的疑慮。</p>

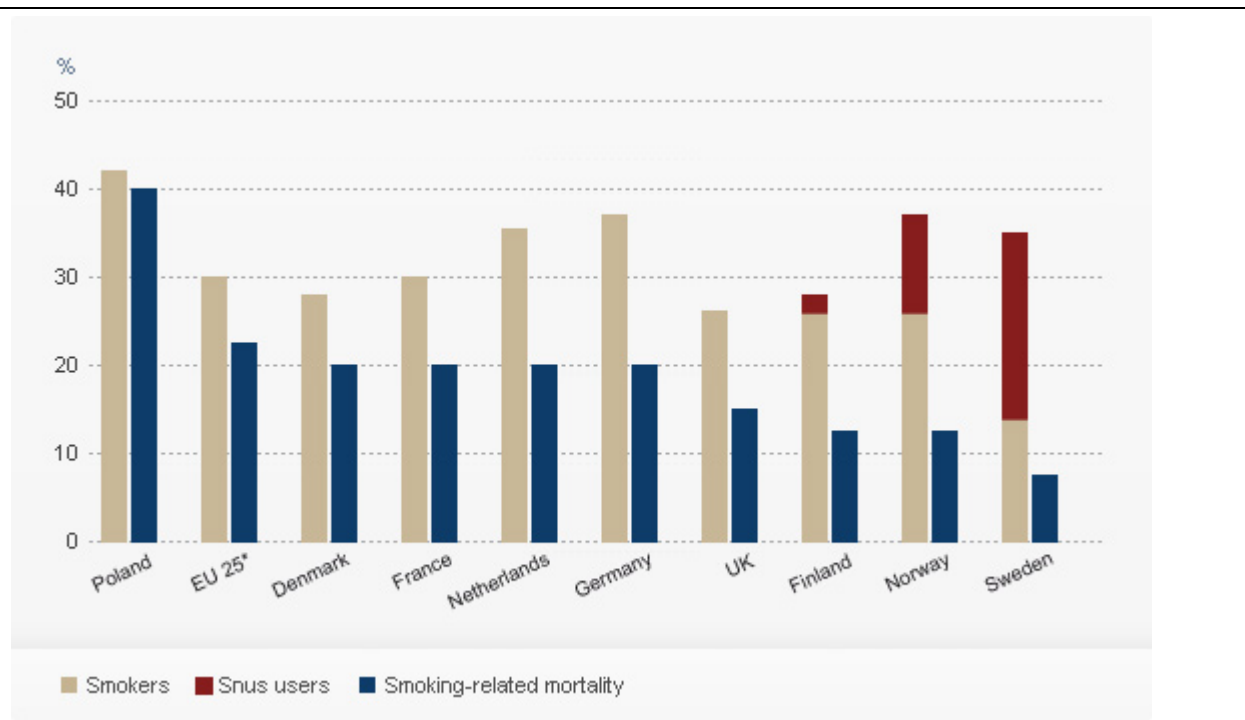
<p>scientifically based manner, and of considering all of the concerns mentioned above.</p>	
<p>Why do some researchers oppose this approach?</p>	<p>為何某些研究人員反對菸品減害法？</p>
<p>Opponents to the harm reduction approach argue that it could lead to undesired health-related consequences. For example, an individual might begin using snus in an attempt to quit smoking, but end up using both snus and cigarettes (Henningfield et al. 2002). Other individuals who perhaps would never have taken up smoking might adopt the use of snus, believing it to be harmless.</p>	<p>反對人士認為減害法可能會造成其他不良的健康相關後果。舉例來說，有人可能為了戒菸開始使用口含菸 (snus)，但最後的結果則是同時使用口含菸 (snus) 與香菸 (2002 年的 Henningfield 等人)。其他人原本可能永遠不會吸菸，但因為採信口含菸 (snus) 沒有害處的說法而開始使用。</p>
<p>Critics of the harm reduction approach contend that the only risk-free solution is quitting tobacco altogether. They</p>	<p>批評減害法的人士主張，只有戒除菸草產品，才是唯一的零風險解決方案。他們強調雖然口含菸 (snus) 的風險可能</p>

<p>emphasize that snus may carry less risk than cigarettes, but that switching to snus is not without some risk of its own.</p>	<p>低於香菸，但是轉為使用口含菸 (snus) 並不是完全沒有風險。</p>
<p>REFERENCES</p> <p>Foulds, J., Ramstrom, L., Burke, M., Fagerstrom, K. 2003. Effect of smokeless tobacco (snus) on smoking and public health in Sweden. <i>Tob. Control</i> 12(4):349-359.</p> <p>Henningfield, J.E. and Fagerström, K.O. 2001. Swedish Match Company, Swedish snus and public health: A harm reduction experiment in progress? <i>Tob. Control</i> 10:253-257.</p> <p>Levy, D.T., Mumford, E.A., Cummings, K.M., Gilpin, E.A., Giovino, G., Hyland, A., Sweanor, D., and Warner, K.E. 2004. The relative risks of a low-nitrosamine smokeless tobacco product compared with smoking cigarettes: Estimates of a panel of experts. <i>Cancer Epidemiol. Biomarkers Prev.</i> 13:2035-2042.</p> <p>Martinet, Y., Bohadana, A., and Fagerstrom, K. 2006. Would alternate tobacco products be better than smoking? <i>Lung Cancer</i> [Epub ahead of print] doi:10.1016/j.lungcan.2006.03.006.</p> <p>Rodu, B., Stegmayr, B., Nasic, S., Cole, P., and Asplund, K. 2003. Evolving patterns of tobacco use in northern Sweden. <i>J. Int. Med.</i> 253:1-6.</p> <p>Roth, H.D., Roth, A.B., and Liu, X. 2005. Health risks of smoking compared to Swedish snus. <i>Inhal. Toxicol.</i> 17:741-748.</p> <p>World Health Organization. 2006. Why is tobacco a public health priority? <i>Finns</i></p>	<p>參考文獻</p> <p>Foulds, J., Ramstrom, L., Burke, M., Fagerstrom, K. 2003. Effect of smokeless tobacco (snus) on smoking and public health in Sweden. <i>Tob. Control</i> 12(4):349-359.</p> <p>Henningfield, J.E. and Fagerström, K.O. 2001. Swedish Match Company, Swedish snus and public health: A harm reduction experiment in progress? <i>Tob. Control</i> 10:253-257.</p> <p>Levy, D.T., Mumford, E.A., Cummings, K.M., Gilpin, E.A., Giovino, G., Hyland, A., Sweanor, D., and Warner, K.E. 2004. The relative risks of a low-nitrosamine smokeless tobacco product compared with smoking cigarettes: Estimates of a panel of experts. <i>Cancer Epidemiol. Biomarkers Prev.</i> 13:2035-2042.</p> <p>Martinet, Y., Bohadana, A., and Fagerstrom, K. 2006. Would alternate tobacco products be better than smoking? <i>Lung Cancer</i> [Epub ahead of print] doi:10.1016/j.lungcan.2006.03.006.</p> <p>Rodu, B., Stegmayr, B., Nasic, S., Cole, P., and Asplund, K. 2003. Evolving patterns of tobacco use in northern Sweden. <i>J. Int. Med.</i> 253:1-6.</p> <p>Roth, H.D., Roth, A.B., and Liu, X.</p>

<p>på: http://www.who.int/tobacco/health_priority/en/print.html.</p>	<p>2005. Health risks of smoking compared to Swedish snus. Inhal. Toxicol. 17:741-748.</p> <p>World Health Organization. 2006. Why is tobacco a public health priority? Finns</p> <p>på: http://www.who.int/tobacco/health_priority/en/print.html.</p>
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<h1>The Swedish Experience</h1>	<h1>瑞典經驗</h1>
<p>The risk of dying from a tobacco-related illness is lower in Sweden than in any other European country despite tobacco consumption being on a comparable level with other European countries. Within the scientific world, this paradox is referred to as the Swedish Experience.</p>	<p>雖然瑞典的菸草消耗量與其他歐洲國家相同，但是因菸草相關疾病而死亡的風險卻低於任何其他歐洲國家；科學界將這種矛盾現象稱為「瑞典經驗」。</p>
<p>The Swedish Experience can probably be explained by Swedish men's unique tobacco consumption, which comprises to a large extent of snus. Total tobacco consumption is about the same as in comparable countries, but Swedish men smoke considerably less. The proportion of daily smokers is currently 12 percent among men, which is the lowest in</p>	<p>瑞典男性消耗的菸草產品與眾不同，他們使用口含菸 (snus) 的比例相當高，這可能是造成瑞典經驗的原因。瑞典男性的總菸草消耗量與同類國家相似，但吸菸人口卻明顯減少。目前瑞典每日吸菸男性的比例為 12%，是歐洲地區最低的國家，而使用 snus 的瑞典男性則有 19%，因此在瑞典使用口含菸 (snus) 比吸菸更為普遍。</p>

<p>Europe. In addition, 19 percent of Swedish men use snus. In Sweden, snus is thus more common than smoking.</p>	
<p>The positive effect of this relationship is a very low frequency of tobacco-related illnesses among Swedish men and a low level of smoke-related deaths. The unique relationship is documented in a large number of epidemiological studies that show that Sweden has the lowest risk of lung cancer in industrial countries.</p> <p>Although snus cannot be given a clean bill of health in terms of negative health effects, research findings show that the health hazards is considerably lower with snus than with smoking.</p>	<p>這項關聯的正面效應，就是瑞典男性罹患菸草相關疾病的比例非常低，因此與吸菸有關的死亡比例也不高。在非常多的流行病學研究中，都記錄了這項特殊關聯，並顯示瑞典是肺癌風險最低的工業國家。雖然口含菸 (snus) 對健康而言並不是完全無害，但研究結果顯示口含菸 (snus) 對健康的危害仍遠低於吸菸。</p>
<p>Most snus users and lowest mortality in Sweden</p>	<p>瑞典擁有最多的口含菸 (snus) 使用者及最低的死亡率</p>



*EU 25 refers to the 25 EU member states before expansion on January 1, 2007.

*EU 25 代表歐盟在 2007 年 1 月 1 日擴張前的 25 個會員國。

The diagram shows the proportion of smokers and snus users among men and the risk of dying in a smoking-related disease. Despite the fact that tobacco consumption is at least as high in Sweden as in other European countries, the risk of being afflicted by a smoking-related fatal disease is significantly lower. Many researchers

圖表顯示男性吸菸者與男性口含菸 (snus) 使用者的比例, 以及因吸菸相關疾病而死亡的風險。雖然瑞典的菸品消費量並未低於其他歐洲國家, 但是罹患吸菸相關致命疾病的風險卻顯著降低。許多研究人員認為這是因為口含菸 (snus) 在瑞典取代了危害更高的香菸。

<p>believe</p> <p>that this is because snus replaces more</p> <p>harmful cigarettes in Sweden.</p>	
<p>Sources:</p> <p>Proportion of daily smokers among men: WHO, European Commission and national statistics authorities for the Nordic countries.</p> <p>Proportion of daily snus users among men: Public Health Institute in Sweden, Directorate of Health in Norway and the Public Health Institute in Finland. The diagram does not take into consideration that the same persons may be both smokers and snus users. In Sweden, about two percent of the male population both smoke and use snus daily.</p> <p>Risk for a 35-year old man to be afflicted by a smoking-related fatal disease before the age of 70: Peto, R.; Lopez, AO; Boreham, J; Thun, M.; Heath, C.</p>	<p>資料來源：</p> <p>男性每日吸菸人口比例：世界衛生組織 (WHO)、歐盟執行委員會 (European Commission) 及北歐國家的國家統計有關單位。</p> <p>男性每日使用口含菸 (snus) 的人口比例：瑞典公共衛生研究院 (Public Health Institute in Sweden)、挪威衛生部 (Directorate of Health in Norway) 及芬蘭公共衛生研究院 (Public Health Institute in Finland)。本圖表並未考量個人同時吸菸及使用 snus 的情形。在瑞典約有 2% 的男性每日同時吸菸及使用口含菸 (snus)。</p> <p>Risk for a 35-year old man to be afflicted by a smoking-related fatal disease before the age of 70: Peto, R.; Lopez, AO; Boreham, J; Thun, M.; Heath, C.</p>
<p>International attention</p>	<p>國際關注</p>

<p>The Swedish experience has received major attention and currently plays an important role in international health debates. For a growing number of researchers within the tobacco area, it is becoming increasingly evident that snus could function as an alternative to cigarettes and that it results in considerably reduced health risks.</p>	<p>瑞典經驗已獲得廣泛關注，目前在國際健康領域也是討論的重要議題。在菸品領域有越來越多的研究人員認為，使用口含菸 (snus) 做為香菸替代品的可行性逐漸增加，而且口含菸 (snus) 可大幅減少對健康的危害。</p>
<p>The internationally known tobacco researchers, Jonathan Foulds and Lynn Kozlowski, wrote in an editorial in the medical magazine, The Lancet, in May 2007, that it is “perverted” public health politics to make tobacco available in its most harmful form, namely cigarettes, while neglecting to inform consumers that tobacco is available in a significantly less harmful form, namely snus.</p>	<p>國際知名的菸草研究人員 Jonathan Foulds 與 Lynn Kozlowski，曾在 2007 年 5 月份的醫學雜誌「The Lancet」撰寫評論，文中表示提供危害程度最高的菸草產品（亦即香菸），同時不讓消費者瞭解有其他危害程度大幅降低的菸草產品（即口含菸 (snus)），是「不正當」的公共衛生政策。</p>

<p>At the end of 2006, the independent organization, American Council on Science and Health, ACSH, published a report “Helping Smokers Quit: A Role for Smokeless Tobacco?” The ACSH discusses the strategies that have been used to date by authorities and others to reduce the harmful effects of tobacco smoking. The authorities’ strategies are often based on an irreconcilable attitude against all types of tobacco products. In the report, these strategies are compared with harm reduction, which is based on most smokefree tobacco products, for example, Swedish snus, and is dramatically much less harmful than cigarettes. The ACSH believes that this is the attitude that the authorities should adopt, and points to the Swedish</p>	<p>獨立機構美國科學與健康委員會 (American Council on Science and Health , 簡稱 ACSH) 在 2006 年底發表「幫助吸菸者戒菸：無煙菸品的角色？」(Helping Smokers Quit: A Role for Smokeless Tobacco?) 報告，其中討論有關當局及其他機構曾使用的各種策略，以降低吸菸造成的有害影響；有關單位在制定策略時，多半秉持反對所有類型菸草產品的態度。報告中針對上述策略及減害法進行比較，其中減害法是以大部分的無煙菸草產品(例如瑞典口含菸 (snus)) 做為依據，而這些產品對健康的危害遠低於香菸；ACSH 認為這才是有關單位應採取的施政態度，並特別點名瑞典經驗。</p>
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Experience, among others.	
<p>In the autumn of 2006, the US magazine, the Wall Street Journal, highlighted an expert panel at the National Cancer Institute, which had concluded that smokefree tobacco was associated with a 90-percent lower health risk, and Sweden was used as an example of how snus resulted in health benefits in the form of reduced frequency of cancer of the lungs and oral cavity.</p>	<p>美國雜誌「華爾街日報」(Wall Street Journal) 在 2006 年秋季，也強調美國國家癌症研究院 (National Cancer Institute) 專家小組的結論，認為無煙菸草與降低 90% 的健康風險有關連，並以瑞典為例說明口含菸 (snus) 如何提供各項健康方面的好處，例如肺癌及口腔癌率降低。</p>
Facts	事實資料

<ul style="list-style-type: none"> • In 2007, 12 percent of all adult Swedish men smoked on a daily basis. The corresponding figure for Norway was 21 percent, for Denmark 26 percent and the average for Europe (2005, most recent information) was 30 percent. (1) • In 2007, 19 percent of all adult Swedish men used snus on a daily basis. In Norway the figure was 11 percent and in Denmark 2.5 percent used some form of smokefree tobacco regularly. (1) • In 2007, 16 percent of all adult Swedish women smoked on a daily basis. The corresponding figure in Norway was 23 percent, for Denmark 22 percent and the average for Europe (2005, most recent information) was 21 percent. (1) • In 2007, 4 percent of all adult Swedish women used snus on a daily basis. In Norway the figure was 1 percent and in Denmark 0.4 percent used some form of smokefree tobacco regularly. (1) • In Sweden, more smokers switch to snus than vice versa. (2) • Sweden became the first country in the world that in 1997 achieved WHO's target for 2000, that the proportion of adult smokers shall be below 20 percent (3). The other country in Europe to achieve the percentage target was Iceland in 2005 (1), which also has a long tradition of using smokefree tobacco. • In 2000, 10 percent of the deaths 	<ul style="list-style-type: none"> • 在 2007 年，瑞典成年男性有 12% 每日吸菸，而其他國家的對照數據為：挪威 21%，丹麥 26%，而歐洲地區的平均值（最新資料為 2005 年）則為 30%。(1) • 在 2007 年，瑞典成年男性有 19% 每日使用口含菸 (snus)，在挪威及丹麥則各有 11% 及 2.5% 的成年男性，定期使用某種形式的無煙菸草產品。(1) • 在 2007 年，瑞典成年女性有 16% 每日吸菸，而其他國家的對照數據為：挪威 23%，丹麥 22%，而歐洲地區的平均值（最新資料為 2005 年）則為 21%。(1) • 在 2007 年，瑞典成年女性有 4% 每日使用口含菸 (snus)，在挪威及丹麥則各有 1% 及 0.4% 的成年女性，定期使用某種形式的無煙菸草
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<p>among Swedish men were smoke-related, which was the lowest proportion in Europe. The average figure for the EU 25 was 23 percent. (4)</p> <ul style="list-style-type: none"> • Swedish women were at the average EU 25 level in 2000; 7 percent of the deaths were smoke-related. (4) • In 2000, the risk of a 35-year-old man dying from a smoke-related illness before the age of 70 was 3 percent in Sweden compared with 5 percent in Norway, 8 percent in Denmark and 9 percent on average for EU 25. (4) • The corresponding figure for women was 2.1 percent for Sweden, 2.6 percent for Norway, 5.9 percent for Denmark and 1.6 percent on average for EU 25. (4) • The incidence for lung cancer among Swedish men has declined during the past 20 years. However, Swedish women show a rising trend in lung cancer statistics. (5) • In two epidemiological studies that were conducted recently in Sweden, no direct correlation could be established between the use of Swedish snus and cancer of the oral cavity. (6,7) • In two recently conducted epidemiological studies regarding stomach cancer and cancer of the esophagus, no correlation could be established between Swedish snus and an increased risk for any type of these forms of cancer. (8, 9) • The mortality rate in cancer is not 	<p>產品。(1)</p> <ul style="list-style-type: none"> • 在瑞典吸菸者轉用口含菸 (snus) 的人數高於由口含菸 (snus) 轉為吸菸的人數。(2) • 瑞典在 1997 年成為世界第一個國家達成 WHO 針對 2000 年所訂定的目標, 將成年吸菸人口的比例降低至 20% 以下 (3) ; 2005 年的冰島 (1) 則是達成目標的另一個歐洲國家, 他們同樣具有使用無煙菸草產品的悠久歷史。 • 在 2000 年, 瑞典男性僅有 10% 死於吸菸相關疾病, 是歐洲地區比例最低的國家, EU 25 的平均數據為 23%。(4) • 瑞典女性在 2000 年有 7% 死於吸菸相關疾病, 相當於 EU 25 的平均水準。(4) • 在 2000 年, 瑞典 35 歲男性在 70
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<p>elevated among Swedish snus users. (10)</p> <ul style="list-style-type: none"> • The risk for heart attacks is not elevated among in snus users. (11) • In a study comprising Swedish snus users, researchers discovered no significant increases in the diastolic blood pressure, hemoglobin concentration, number of white blood cells, serum cholesterol or triglyceride levels. These findings are compared with the findings from corresponding studies on cigarette smokers. (12) • Both snus users and smokers run a higher risk of dying of cardiovascular diseases than non-tobacco users. The risk for snus users is lower than for smokers. (10) • The health risks associated with snus are most probably less than the risks connected with smoking. (13,14) 	<p>歲之前死於吸菸相關疾病的比例為 3%，挪威為 5%，丹麥為 8%，而 EU 25 的平均值則為 9%。(4)</p> <ul style="list-style-type: none"> • 上述調查的女性對應數據為：瑞典 2.1%，挪威 2.6，丹麥 5.9%，EU 25 的平均值則為 1.6%。(4) • 瑞典男性肺癌的發生率，在過去 20 年間持續下降，不過瑞典女性罹患肺癌的比例則呈現上升趨勢。(5) • 最近在瑞典進行的二項流行病學研究顯示，使用瑞典口含菸 (snus) 與口腔癌之間並無直接關聯。(6,7) • 最近針對胃癌及食道癌進行的二項流行病學研究顯示，使用瑞典口含菸 (snus) 並不會增加罹患任何類型胃癌及食道癌的風險。(8, 9) • 瑞典口含菸 (snus) 使用者的癌症死亡率並未提高。(10) • 口含菸 (snus) 使用者的心臟病風
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	<p>險並未提高。(11)</p> <ul style="list-style-type: none">• 研究人員在一項針對瑞典口含菸 (snus) 使用者的研究中，發現舒張壓、血紅素濃度、白血球數、血清膽固醇及三酸甘油脂等數值均無大幅上升，並將結果與吸菸者的對應研究進行比較。(12)• 口含菸 (snus) 使用者與吸菸者死於心血管疾病的風險，均高於不使用菸草者；口含菸 (snus) 使用者的風險則低於吸菸者。(10)• 口含菸 (snus) 相關的健康風險，非常可能低於吸菸的相關風險。 (13,14)
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<p>The figures within parentheses refer to the list of references.</p>	<p>括號內的數字代表以下參考文獻的列表編號。</p>
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<p>Magnusson, A. Oral snuff, smoking habits and alcohol consumption in relation to oral cancer in a Swedish case-control study. <i>Int. J. Cancer</i>, 77, 341-6 (1998).</p> <p>8. Ye, W., Ekström, A.M., Hansson, L.-E., Bergström, R., Nyrén, O. Tobacco, alcohol and the risk of gastric cancer by sub-site and histologic type. <i>Int. J. Cancer</i>, 83, 223-9 (1999).</p> <p>9. Lagergren, J., Bergström, R., Lindgren, A., Nyrén, O. The role of tobacco, snuff and alcohol use in the aetiology of cancer of the oesophagus and gastric cardia. <i>Int. J. Cancer</i>, 85, 340-6 (2000).</p> <p>10. Bolinder, G., Alfredsson, L., Englund, A., de Faire, U. Smokeless tobacco and increased cardiovascular mortality among Swedish construction workers. <i>Am. J. Public Health</i>, 84, 399-404 (1994).</p> <p>11. Huhtasaari, F., Lundberg, V., Eliasson, M., Janlert, U., Asplund, K. Smokeless tobacco as a possible risk factor for myocardial infarction: A population-based study in middle-aged men. <i>J. Am. Coll. Cardiol.</i>, 34, 1784-90 (1999).</p> <p>12. Eliasson, M., Lundblad, D., Hägg, E. Cardiovascular risk factors in young snuff-users and cigarette smokers. <i>J. Int. Med.</i>, 230, 17-22 (1991).</p> <p>13. Steen, T. Helserisikoen ved snusbruk. <i>Tidsskr. Nor. Laegeforen.</i>, 116, 625-7 (1996).</p> <p>14. Ahlbom, A., Olsson, U.A., Pershagen, G. Health risks med snus. The National Board of Health and Welfare report 1997:11, 28 (1997).</p>	<p>Björklund, A., Rutqvist, L.E. Smoking tobacco, oral snuff, and alcohol in the etiology of squamous cell carcinoma of the head and neck. <i>Cancer</i>, 82, 1367-75 (1998).</p> <p>7. Schildt, E.-B., Eriksson, M., Hardell, L., Magnusson, A. Oral snuff, smoking habits and alcohol consumption in relation to oral cancer in a Swedish case-control study. <i>Int. J. Cancer</i>, 77, 341-6 (1998).</p> <p>8. Ye, W., Ekström, A.M., Hansson, L.-E., Bergström, R., Nyrén, O. Tobacco, alcohol and the risk of gastric cancer by sub-site and histologic type. <i>Int. J. Cancer</i>, 83, 223-9 (1999).</p> <p>9. Lagergren, J., Bergström, R., Lindgren, A., Nyrén, O. The role of tobacco, snuff and alcohol use in the aetiology of cancer of the oesophagus and gastric cardia. <i>Int. J. Cancer</i>, 85, 340-6 (2000).</p> <p>10. Bolinder, G., Alfredsson, L., Englund, A., de Faire, U. Smokeless tobacco and increased cardiovascular mortality among Swedish construction workers. <i>Am. J. Public Health</i>, 84, 399-404 (1994).</p> <p>11. Huhtasaari, F., Lundberg, V., Eliasson, M., Janlert, U., Asplund, K. Smokeless tobacco as a possible risk factor for myocardial infarction: A population-based study in middle-aged men. <i>J. Am. Coll. Cardiol.</i>, 34, 1784-90 (1999).</p> <p>12. Eliasson, M., Lundblad, D., Hägg, E. Cardiovascular risk factors in young snuff-users and cigarette smokers. <i>J. Int. Med.</i>, 230, 17-22 (1991).</p> <p>13. Steen, T. Helserisikoen ved snusbruk. <i>Tidsskr. Nor. Laegeforen.</i>, 116, 625-7 (1996).</p> <p>14. Ahlbom, A., Olsson, U.A., Pershagen,</p>
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Research on snus	口含菸 (snus) 的研究
<p>In recent years, a number of Swedish studies have been published on the effects of snus on health, based on Swedish conditions. Previously published research on oral tobacco products has mainly dealt with product types used in other parts of the world, such as India, meaning the results have not been representative. The information given here is a summary of current research on snus of the type used in Sweden and the rest of the Nordic region.</p>	<p>近年來發表的多項瑞典研究，依據瑞典境內的狀況探究口含菸 (snus) 對健康的影響。過去發表的口服菸草產品研究報告，多半探討世界其他地區使用的產品類型（如印度），因此研究結果並不具代表性。本文所提供的摘要資訊，是目前針對瑞典及其他北歐地區使用的口含菸 (snus) 所進行的研究。</p>
<p>More information on these studies can be found on Swedish Matches website, www.gothiatek.com.</p>	<p>您可前往瑞典火柴公司網站：www.gothiatek.com 瞭解更多相關的研究資訊。</p>

<p>Swedish Match seeks to constantly reduce or minimize presumed health risks in its snus products and to contribute to increased knowledge on the characteristics and use of snus.</p> <p>Consequently, Swedish Match conducts its own research and development efforts, which focus on the continuous improvement of products.</p>	<p>瑞典火柴公司持續努力降低或盡可能減少口含菸 (snus) 產品可能的健康風險，並致力於貢獻對口含菸 (snus) 特性及使用的瞭解。因此瑞典火柴公司本身即執行各項研發工作，以持續改良產品做為工作重點。</p>
<p>200 years of Swedish snus</p>	<p>瑞典口含菸 (snus) 的 200 年歷史</p>
<p>Snus of the type used in the Nordic region has a history stretching back nearly 200 years. In Sweden, snus has been one of the dominant tobacco products for an entire century. Its health effects have now been well elucidated in a large number of Swedish scientific studies.</p>	<p>北歐地區使用的口含菸 (snus)，最早可追溯至近 200 年前。口含菸 (snus) 在瑞典是上個世紀最主要的菸草產品，目前已有許多的瑞典科學研究，詳盡說明其對健康的影響。</p>

Overall, the use of tobacco in Sweden is on a level comparable to many other European countries. Despite this fact, the risk of dying of a tobacco-related disease is lower in Sweden than in any other European country. This is true of men. One reason contributing to this is thought to be the fact that Swedish men use snus considerably more than they smoke. The risk for Swedish women is comparable to that for women in other parts of Europe.	<p>整體而言，瑞典使用菸品的普遍程度與其他歐洲國家相似。儘管如此，瑞典境內因菸草相關疾病而死亡的風險，卻低於其他歐洲國家；對瑞典男性而言確實如此。其中的原因之一，可能是瑞典男性使用口含菸 (snus) 的比率遠高於香菸。至於瑞典女性的死亡風險，則與歐洲其他地區相同。</p>
“ No evidence to support a connection between the usage of snus and pancreatic cancer ”	“ 並沒有證據支持使用口含菸 (snus) 與胰臟癌之間的關聯性 ”
Current research findings	目前的研究成果

<div data-bbox="287 208 734 801"> <p>Cancer</p> <p>A number of scientific studies have arrived at the following conclusions:</p> <ul style="list-style-type: none"> ■ The consumption of the type of snus used in Sweden and Norway is not a risk factor for oral cancer. ■ No connection has been found between the use of snus and cancer of the throat or esophagus. ■ No connection has been found between the use of snus and different types of stomach cancer. ■ Cancer-related mortality is not elevated in Swedish snus users. </div>	<p>癌症</p> <p>有些科學研究報告作出了以下的結論：</p> <ul style="list-style-type: none"> • 使用瑞典與挪威類型的口含菸 (snus) 並非口腔癌的風菸因素之一。 • 沒有發現使用口含菸 (snus) 與喉嚨癌及食道癌的關聯性。 • 沒有發現使用口含菸 (snus) 與不同型的胃癌的關聯性。 • 在瑞典口含菸 (snus) 的使用者，癌症相關的死亡率沒有增加。
<p>According to three Swedish studies (of which, two were conducted within the framework of the World Health Organizations MONICA project), the use of snus does not increase the risk of heart attack. However, there are</p>	<p>有三項瑞典研究報告 (其中二項屬於世界衛生組織的 MONICA 專案) 指出，使用口含菸 (snus) 並不會增加心臟病的風險； 不過若探究使用口含菸 (snus) 與其他心血管疾病之間的關聯，則出現不一結果，但口含菸 (snus)</p>

contradictory results regarding the use of snus and other cardiovascular diseases. But snus does not appear to contribute to hardening of the arteries.	並未顯示會造成動脈硬化。
<p>The use of snus has a direct effect on heart rate and blood pressure.</p> <p>However, it is unclear whether snus causes chronic high blood pressure.</p> <p>Elevated blood pressure has been observed in some studies but not in others.</p>	<p>使用口含菸 (snus) 會直接影響心跳率及血壓，不過不清楚口含菸 (snus) 是否會造成慢性高血壓。某些研究發現使用口含菸 (snus) 會造成血壓升高，但其他研究並沒有出現這種情形。</p>
<p>A Swedish study (within the framework of the World Health Organizations MONICA project) showed that the use of snus does not increase the risk of cerebral hemorrhage (stroke).</p>	<p>有一項瑞典研究 (屬於世界衛生組織的 MONICA 專案) 顯示，使用口含菸 (snus) 並不會增加腦出血 (中風) 的風險。</p>
Results are contradictory regarding	但若探究口含菸 (snus) 是否提升罹患

<p>whether snus contributes to an increased risk of age-related diabetes (type-2 diabetes). The largest and most recent Swedish study (Eliason et al, Journal of Internal Medicine 2004) found no verifiably increased risk of age-related diabetes among snus users, although it did find this among smokers.</p>	<p>年齡相關糖尿病 (第 2 型糖尿病) 的風險，則出現相反結果。根據一項最新且規模最大的瑞典研究結果 (Eliason 等人, Journal of Internal Medicine, 2004 年)，並沒有證據能證實使用口含菸 (snus) 會提升罹患年齡相關糖尿病的風險，但吸菸者的風險則確實增加。</p>
<p>An expert panel has conducted a risk assessment (published in Cancer Epidemiol Biomarkers 2004) of snus and other products. Choosing snus instead of smoking reduces the risk of death from a tobacco-related disease (defined as lung cancer, oral cancer, coronary diseases and premature death) by 90 percent, according to the assessment.</p>	<p>專家小組已針對口含菸 (snus) 與其他產品執行風險評估 (發表於 2004 年的 Cancer Epidemiol Biomarkers)。根據評估結果，選擇使用口含菸 (snus) 取代吸菸，可降低菸草相關疾病 (定義為肺癌、口腔癌、冠狀動脈疾病及過早死亡) 的死亡風險達 90%。</p>

Professors Brad Rodu and Philip Cole:	Brad Rodu 及 Philip Cole 教授表示：
“With Swedish tobacco habits, 200,000 lives would be saved each year within the EU.”	“若遵循瑞典使用菸草的習慣,則歐洲地區每年可挽救 20 萬人的生命。”
Page updated May 9, 2008	頁面更新日期：2008 年 5 月 9 日

<h1>Reports and papers</h1>	<h1>報告與論文</h1>
<p>Several research reports dealing with effects of Swedish Snus use on health have been published in the last 10 -15 years. Previously published reports on oral tobacco use mostly dealt with products from other countries, products which are not used in Sweden.</p>	<p>過去 10 至 15 年間已有發表過多項研究報告探究使用瑞典口含菸 (snus) 對健康的影響。之前所發表的口服菸草產品研究報告，大多是研究其他國家的產品，而不是瑞典所使用的產品。</p>
<p>On this page you will find a summary of the research on Swedish Snus by GothiaTek®.</p>	<p>您可在本頁找到有關 GothiaTek® 瑞典口含菸 (snus) 的研究摘要。</p>

<ul style="list-style-type: none"> • Nicotine uptake • Snus, nicotine and nicotine addiction • Oral lesions • Cancer • Gastrointestinal diseases • Cardiovascular disease • Stroke • Diabetes • Pregnancy outcomes • External links 	<ul style="list-style-type: none"> • 尼古丁攝取 (英文) • 口含菸 (snus)、尼古丁及尼古丁成癮 (中文) • 口腔病變 (英文) • 癌症 (英文) • 腸胃道疾病 (英文) • 心血管疾病 (英文) • 中風 (英文) • 糖尿病 (英文) • 懷孕結果 (英文) • 外部連結 (英文)
Page updated May 9, 2008	頁面更新日期：2008 年 5 月 9 日

Smoking cessation	戒菸
<ul style="list-style-type: none"> There is a growing body of evidence that using Swedish snus can help some people quit smoking. 	<ul style="list-style-type: none"> 越來越多證據顯示，使用瑞典口含菸 (snus) 可協助某些人戒菸。
<ul style="list-style-type: none"> Most cigarette smokers want to quit smoking, but few are able to do so. Many smokers say they need help to be able to succeed in quitting. 	<ul style="list-style-type: none"> 大部分的吸菸者希望戒菸，但很少有人能夠達成目標。許多吸菸者表示自己需要協助才能成功戒菸。
<ul style="list-style-type: none"> Smoking rates among Swedish men have declined significantly over time as snus use has increased, suggesting that snus might be responsible for this decline. 	<ul style="list-style-type: none"> 瑞典男性的吸菸率長期以來已大幅降低，而使用口含菸 (snus) 的比例則向上成長，因此口含菸 (snus) 可能是造成吸菸率下降的原因。
<ul style="list-style-type: none"> Epidemiology studies have shown that snus can serve as an effective smoking cessation aid, particularly among Swedish men. 	<ul style="list-style-type: none"> 流行病學研究顯示，口含菸 (snus) 可有效協助戒菸，特別是瑞典男性。
<ul style="list-style-type: none"> There are many benefits associated with using snus to quit smoking. There are also some public health implications, and some people have raised concerns that there could be unintended consequences. 	<ul style="list-style-type: none"> 使用口含菸 (snus) 戒菸有許多相關的好處，不過也存在某些對公共衛生的影響，部分人士也對可能有意想不到的後果感到憂慮。

<p>Why would anyone consider using snus to quit smoking?</p>	<p>為何要使用口含菸 (snus) 戒菸？</p>
<p>The vast majority of cigarette smokers want to quit smoking, and most who want to quit say they need help to do so, but only about 2% manage to quit each year (USDHHS 2000). Most believe they need support to be successful in quitting (Bolinder 2003). There is obviously a need for any method, especially an informal one, by which an addicted cigarette smoker could quit smoking.</p>	<p>大部分的吸菸者希望戒菸，且大部分希望戒菸的人表示需要協助，但每年僅有 2% 的吸菸者能夠戒菸 (USDHHS , 2000 年) 。大部分人認為自己需要協助才能成功戒菸(Bolinder , 2003 年) 。要讓成癮的吸菸者戒菸，一定需要使用各種方法，特別是可於日常使用的方法。</p>
<p>What evidence is there that the use of snus can lead to quitting smoking?</p>	<p>有什麼證據顯示使用口含菸 (snus) 可戒菸？</p>
<p>The pattern of smoking seen in Sweden over time is very different from that of other countries. During the past 20 years, smoking declined markedly while use of snus became more popular, especially among men. This striking inverse relationship suggested that Swedish men may have been using</p>	<p>在瑞典地區長期觀察的吸菸模式，與其他國家大相逕庭。在瑞典，過去 20 年間的吸菸率大幅降低，同時口含菸 (snus) 的使用則更為普遍(特別是男性) 。從這項顯著的逆向成長關係來看，瑞典男性可能使用口含菸 (snus) 戒菸。有一項流行病學研究特別針對本項假設進行驗證，發現口含</p>

<p>snus to quit smoking. An epidemiology study that specifically examined this hypothesis found that snus use was associated with smoking cessation (Furberg et al. 2005).</p>	<p>菸 (snus) 的使用與戒菸有關係 (2005 年的 Furberg 等人) 。</p>
<p>There is also evidence that the general public in Sweden recognizes that the use of snus as a simple and uncomplicated way to quit smoking. Surveys show that many smokers stopped smoking when they started using snus (TEMO 2004). In addition, there is evidence that people who use snus are more likely to be successful in quitting smoking than those who use other aids, such as nicotine gum or the nicotine patch (Ramström and Foulds 2006). Ultimately, additional data from the most rigorous studies (called controlled clinical trials) is needed to demonstrate that snus is an effective aid in quitting smoking.</p>	<p>此外也有證據顯示瑞典的一般大眾，認可使用口含菸 (snus) 做為簡易的戒菸方式。調查顯示許多吸菸者開始使用口含菸 (snus) 之後就停止吸菸 (TEMO , 2004 年) ，並有證據顯示使用口含菸 (snus) 成功戒菸的機率，高於其他的協助方式，例如尼古丁口嚼錠或貼片 (2006 年的 Ramström 及 Foulds) 。我們最終需要利用最精密的研究 (稱為對照臨床試驗) 取得更多資料，以證實口含菸 (snus) 能夠有效協助戒菸。</p>
<p>What are the benefits of using</p>	<p>使用口含菸 (snus) 戒菸有哪些</p>

snus to quit smoking?	好處？
<p>There are several important benefits: snus is available without prescription, may be less expensive than traditional nicotine replacement therapies, and is associated with an immediate reduction in the health risks attributed to smoking. A quantitative analysis recently confirmed that the health risks associated with snus use are significantly lower than those associated with smoking (Roth et al. 2005).</p>	<p>使用口含菸 (snus) 戒菸有多項重要好處：口含菸 (snus) 無須處方即可取得，其價格低於傳統的尼古丁替代療法，並可立即降低與吸菸相關的健康風險。最近的量化分析證實使用口含菸 (snus) 的相關健康風險，遠低於吸菸的相關健康風險(2005 年的 Roth 等人)。</p>
Are there any risks to using snus to quit smoking?	使用口含菸 (snus) 戒菸是否存在任何風險？
<p>There is some debate in the public health community about advocating using snus to quit smoking. Critics fear that there could be unintended consequences and argue that the only risk-free solution is to quit all tobacco products.</p>	<p>公共衛生社群對於倡導使用口含菸 (snus) 戒菸有不同看法。反對者擔心這種方式可能會造成意想不到的後果，並主張只有戒除菸草產品，才是唯一的零風險解決方案。</p>
<p>However, given the significant health hazards of long-term smoking, and the need for effective</p>	<p>不過，考量長期吸菸的重大健康風險以及對有效戒菸工具的需求，許多人認為持續研究口含菸</p>

<p>smoking cessation tools, many people believe that it is important to continue to investigate the potential use of snus as a smoking cessation aid.</p>	<p>(snus) 用於戒菸的可能方式是項相當重要的議題。</p>
<p>REFERENCES</p> <p>Bolinder, G. 2003. Swedish snuff: A hazardous experiment when interpreting scientific data into public health ethics. <i>Addiction</i> 98:1201-1204.</p> <p>Furberg, H., Bulik, C.M., Lerman, C., Lichtenstein, P., Pedersen, N.L., and Sullivan, P.F. 2005. Is Swedish snus associated with smoking initiation or smoking cessation? <i>Tobacco Control</i> 14:422-424.</p> <p>Ramström, L.M. and Foulds, J. 2006. Role of snus in initiation and cessation of tobacco smoking in Sweden. <i>Tobacco Control</i> 15:210-214.</p> <p>Roth, H.D., Roth, A.B., and Liu, X. 2005. Health risks of smoking compared to Swedish snus. <i>Inhal. Toxicol.</i> 17:741-748.</p> <p>TEMO 2004. A word to the consumer. Basic tobacco consumption data. Study commissioned by Swedish Match.</p> <p>U.S. Department of Health and Human Services. 2000. Reducing tobacco use: A report of the Surgeon General 2000. At a glance. Available at: http://www.cdc.gov/tobacco/sgr/sgr_2000/index.htm.</p>	<p>參考文獻</p> <p>Bolinder, G. 2003. Swedish snuff: A hazardous experiment when interpreting scientific data into public health ethics. <i>Addiction</i> 98:1201-1204.</p> <p>Furberg, H., Bulik, C.M., Lerman, C., Lichtenstein, P., Pedersen, N.L., and Sullivan, P.F. 2005. Is Swedish snus associated with smoking initiation or smoking cessation? <i>Tobacco Control</i> 14:422-424.</p> <p>Ramström, L.M. and Foulds, J. 2006. Role of snus in initiation and cessation of tobacco smoking in Sweden. <i>Tobacco Control</i> 15:210-214.</p> <p>Roth, H.D., Roth, A.B., and Liu, X. 2005. Health risks of smoking compared to Swedish snus. <i>Inhal. Toxicol.</i> 17:741-748.</p> <p>TEMO 2004. A word to the consumer. Basic tobacco consumption data. Study commissioned by Swedish Match.</p> <p>U.S. Department of Health and Human Services. 2000. Reducing tobacco use: A report of the Surgeon General 2000. At a glance. Available at: http://www.cdc.gov/tobacco/sgr/sgr_2000/index.htm.</p>
<p>Page updated May 9, 2008</p>	<p>頁面更新日期：2008 年 5 月 9 日</p>

Our quality standard

我們的品質標準

Swedish snus differs substantially from most other smokefree tobacco products worldwide. The manufacturing falls under the Swedish Food Act and additives used are approved for use in food. In addition, Swedish Match has also developed its own quality standard, GothiaTek®.

瑞典口含菸 (snus) 有別於全球其他大部分的無煙菸草產品，製造時遵循瑞典食品法規，並使用核准食用的添加劑；此外，瑞典火柴公司也開發出自己的品質標準：GothiaTek®。



The Swedish

Match quality standard for Swedish snus, **GothiaTek®**, is the result of the successful implementation of many years of research and development. This has led to a unique production process and



瑞典火柴公司經過多年

成功的研發實作，制定出瑞典口含菸 (snus) 的品質標準 **GothiaTek®**，以最優異的製造程序，生產最出色的產品。

unique products.	
<p>The Swedish Match quality standard</p> <p>GothiaTek® provides a guarantee assuring the consumer that all Swedish Match products undergo controls and maintain the highest quality throughout all the stages from tobacco plant to consumer:</p>	<p>瑞典火柴公司透過 GothiaTek® 品質標準，向消費者保證所有的瑞典火柴公司產品均獲得嚴密控管，從種植菸草開始，乃至於成品上市販售的所有階段，都維持最高品質：</p>
<ul style="list-style-type: none"> Requirements on maximum permitted levels of suspected harmful elements that occur naturally in tobacco. 	<ul style="list-style-type: none"> 規範菸草內可能有害物質的最高天然含量。
<ul style="list-style-type: none"> Requirements on raw material. 	<ul style="list-style-type: none"> 規範原料。
<ul style="list-style-type: none"> Requirements on the manufacturing process. 	<ul style="list-style-type: none"> 規範製造程序。
<ul style="list-style-type: none"> Requirements on qualified product information to consumers. <p>Our ambition is to continuously reduce or eliminate alleged harmful components in Swedish snus and to increase the knowledge about our snus products and its impact on users. Therefore we support independent research and our own research and development work is directed at continual improvement of our products. We also wish to cooperate with</p>	<ul style="list-style-type: none"> 規範向消費者提供合格產品資訊之。 <p>本公司所追求的目標，是持續減少或排除瑞典 snus 的可能有害物質，並增進對本公司 snus 產品的瞭解，及其對使用者的影響；因此我們支持獨立研究活動，並自行執</p>

legislators and authorities about our products so that legislation and regulations shall be based on all available knowledge.	<p>行各項研發工作，以持續改良產品。我們也希望針對公司產品與立法者及有關單位合作，提供所有已知的知識做為立法依據。</p>
<p>GothiaTek® shall for consumers be not only a standard but also a symbol for trust in our ambition always to use production methods that are based on the best available knowledge regarding selection of raw materials and manufacturing practices.</p>	<p>GothiaTek® 對消費者而言不僅是一種標準，也象徵對本公司的信任，相信我們將秉持使命，在選用原料及製造產品時，一定會依據最適當的已知知識選擇生產方法。</p>
FACTS	事實資訊
<p>GothiaTek® is a quality standard developed and owned by Swedish Match.</p>	<p>GothiaTek® 是由瑞典火柴公司開發及擁有的品質標準。</p>
<p>Swedish snus is a moist to semi-moist, ground, oral tobacco product which is used behind the upper lip. Swedish snus exists in</p>	<p>瑞典 snus 是濕式至半濕式磨碎的口含菸草產品，使用時置於上唇後方。瑞典口含菸 (snus) 分為二種包裝方式：散裝 (loose) 及袋裝 (portion)，二種包裝都有</p>

<p>two packaging formats, loose and portion packed. Both forms exist in different flavors. Swedish snus is made from selected, mainly air-cured tobaccos, water, salt and flavour additives. Swedish snus is pasteurised in a proprietary heat treatment process which satisfies the hygienic requirements of the Swedish Food Act. Swedish snus has a tradition of almost 200 years in Sweden.</p>	<p>提供不同風味的產品。瑞典口含菸 (snus) 精選各種原料進行製造，包括主要以風乾方式處理的菸草，以及水、鹽與香料。瑞典口含菸 (snus) 採用獲得專利的加熱處理程序進行殺菌，符合瑞典食品法規的衛生規範。瑞典口含菸 (snus) 在瑞典已使用近 200 年的時間。</p>
<p>Which are the ingredients in Swedish snus? Read more here</p>	<p>瑞典口含菸 (snus) 的成分為何？詳細資訊請點選此處 (此為英文網頁)</p>
<p>Page updated May 9, 2008</p>	<p>頁面更新日期：2008 年 5 月 9 日</p>

Quality from seed to can	從種子到裝罐的品質控管
Composition	產品成分
Swedish Snus by GothiaTek® is made from selected leaf tobaccos, salts, humectants and flavour additives. Snus is regulated as a food substance in Sweden. Only food approved additives are used. The manufacturing is performed in premises which comply with food standards	採用 GothiaTek® 標準製造的瑞典口含菸 (snus), 製造時採用精選的菸葉、鹽、保濕劑及香味料。口含菸 (snus) 在瑞典是列為食品管理, 僅使用可食用的添加物, 並於遵循食品標準的廠房進行製造。
Tobacco	菸草
Swedish snus by GothiaTek® is made from mainly air cured tobaccos. Traditionally fire-cured tobacco used to be the major ingredient, but this has changed in the last decade.	採用 GothiaTek® 標準製造的瑞典口含菸 (snus), 主要是由風乾的菸草製造, 雖然傳統是以烘乾的菸草做為主要成分, 但從上個年代開始已改變作法。目前採用 GothiaTek® 標準製造的瑞

Today, Swedish snus by GothiaTek® does not contain fire-cured tobacco.	典口含菸 (snus)並未使用烘乾的菸草。
Tobacco is purchased from North and South America, Asia and also from a few countries in Africa and Europe.	我們向北美洲、南美洲、亞洲以及非洲與歐洲的一些國家購買菸草。
Tobacco quality is essential for the Snus products to conform with the GothiaTek® Standard. All components that are not desired in the Snus products come with the tobacco.	對口含菸 (snus) 產品而言，菸草的品質是符合 GothiaTek® 標準的必要條件。口含菸 (snus) 產品中的所有不理想成分均來自於菸草。
The GothiaTek® Standard requires a systematic control of the tobacco chemistry. After many decades of research we have designed a growing and curing regime that satisfies the GothiaTek® Standard.	<p>依據 GothiaTek® 標準的規範，必須以系統化的方式管制菸草的化學成分。經數十年的研究之後，我們設計出一種菸草的生長及乾燥方式，可滿足 GothiaTek® 標準的需求。</p> <p>我們在全球各地的菸草都依據我們的指示種植，不過部分菸草仍在傳統菸草</p>

<p>Around the world tobacco is now grown according to our instructions.</p> <p>However, some tobacco is still purchased on traditional tobacco markets.</p> <p>In order to assure the quality of the tobacco we intend to buy we have designed an early warning system.</p> <p>Tobacco samples are taken already in the farmers' barns and sent to laboratories for analysis. So, when we buy the tobacco we know its chemistry and we can refrain from buying tobacco that does not meet the requirements of the GothiaTek® Standard.</p>	<p>市場採購。</p> <p>為確保我們公司所購買的菸草品質，我們設計出一套初期警告系統。</p> <p>我們在農夫的倉庫中取得菸草樣品，並送往實驗室進行分析，因此能事先瞭解欲購買菸草之化學成分，以避免採購不符合 GothiaTek® 標準的菸草。</p>
Additives	添加物
When making Swedish Snus by	在製造符合 GothiaTek® 標準的瑞典

<p>GothiaTek® the main ingredients except for tobacco are water, salt (table salt) and sodium carbonate.</p> <p>Flavour additives and humectants are also used.</p>	<p>口含菸 (snus) 時，水、鹽（食鹽）及碳酸鈉是菸草以外的主要成分；此外也使用了香味料添加物與保濕劑。</p>
<p>Salt is added mainly for its effect on taste but also has a preservative action which contributes to improved shelf life of the products. Sodium carbonate is used to give the products their characteristic flavour profile but also brings the pH value to the slightly alkaline side. Sodium carbonate will convert to baking soda immediately after it is added.</p>	<p>使用鹽的主要原因是增添味道，不過鹽也具有防腐作用而可以延長產品的銷售期間。碳酸鈉是讓產品呈現特別口味，並將酸鹼值調整為弱鹼；碳酸鈉添加後，會立即轉變為小蘇打。</p>
<p>Flavour additives in general are natural or artificial flavour compounds that comply with food regulations.</p> <p>Flavours are usually dissolved in</p>	<p>香味料添加物一般採用天然物質，或是符合食品規範的人工香味料，添加時通常會溶解於酒精中，而大部分的酒精會在製造過程中蒸發，只留下非常少量的</p>

<p>alcohol when added. Most of the alcohol evaporates during production. Only trace quantities remain.</p>	<p>酒精。</p>
<p>Humectants are added to protect the products from drying out. We use two types: glycerol and propylene glycol. Both of them also have a preservative effect since they lower the water activity of the product, thus preventing micro-organisms from growing.</p>	<p>添加保濕劑的原因，是要讓產品不會脫水變乾。我們使用二種類型的保濕劑：甘油與丙二醇。這兩種保濕劑都可降低產品中的水活性，預防微生物生長，進而提供防腐效果。</p>
<p>Packaging material</p>	<p>包裝材料</p>
<p>Paraffin coated cardboard cans are used for most loose Snus brands. The lids are made of polypropylene.</p>	<p>我們粉末狀的口含菸 (snus) 產品大部分的品牌都使用外層塗有石蠟的硬紙罐，蓋子則使用聚丙烯製造。</p>
<p>For the pouch products we use cans made of polypropylene. Pouch products are more sensitive to drying than loose Snus so plastic cans help to increase shelf life of these</p>	<p>我們使用聚丙烯製造的罐子裝填袋裝產品。袋裝口含菸 (snus) 比粉末產品更容易變乾，因此使用塑膠罐可延長產品的銷售期間。</p>

products.	
The paper material used to pack individual pouches is of similar type to that used in tea bags. The material is made of cellulose fibres plus an adhesive which is approved as packaging material in contact with food.	個別袋裝口含菸 (snus) 使用的包裝紙材與茶包使用的紙材相似。製造材料為纖維素纖維與核可使用於接觸食物做為包裝材料的接著劑。
Manufacturing	製造
Swedish Snus by GothiaTek® is manufactured in three major steps, grinding, processing and packing.	採用 GothiaTek® 標準製造的瑞典口含菸 (snus), 其製造過程分為三個主要步驟：研磨、處理及包裝。
Grinding	研磨
The tobacco is broken up, dried and fed into a grinder. The ground tobacco is sieved into three particle size fractions, coarse, medium and fine. Pre-set quantities of the three fractions are fed into a mixer silo	我們將菸草碎裂、乾燥後放入研磨機，之後將研磨後的菸草碎片篩為三種尺寸：粗糙、適中與精細。我們會依據預設的數量，將三種尺寸的菸草碎片送入混合槽，混合菸草粉末。口含菸 (snus) 粉末混合後就會送入儲存槽，並自動進

<p>where the tobacco flour is mixed.</p> <p>After blending, the Snus flour is fed into a storage silo, from which flour is automatically taken to the processing operation. Each type of Snus flour is kept in a separate silo.</p>	<p>行處理程序。每一種口含菸 (snus) 粉末都儲存在不同的儲存槽。</p>
Processing	處理
<p>Manufacturing of Snus is a batch operation. The whole process is computer controlled and can be run day and night, all week around.</p>	<p>口含菸 (snus) 的製造是以批次方式進行，全部程序均由電腦控管，無論白天或晚上均可運作，連續一整週也沒問題。</p>
<p>To start the process, tobacco flour is automatically weighed and fed into the process blender. Water and salt is added to the batch under stirring. The batch is then heated and kept heated up for a specified time, which varies with brands. Temperature and stirring is controlled by a process computer</p>	<p>製造程序開始時，菸草粉末會自動秤重，並送入處理攪拌器，於攪拌過程中加入水和鹽。每一批原料均加熱並持續一段特定時間加熱保溫處理，而每個品牌的加熱保溫時間並不相同。溫度與攪拌作業均由製造程序的電腦程式控制。這部分的製造程序過去稱為「流</p>

<p>program. This part of the process is traditionally named "sweating" but is more close to a pasteurisation process.</p> <p>After pasteurisation the Snus batch is cooled down and the rest of the ingredients are added. Samples are taken for quality control.</p>	<p>汗」，但比較接近加熱殺菌程序。</p> <p>每一批口含菸 (snus) 在加熱殺菌後，會進行冷卻並加入其他原料，然後取樣以進行品質控制。</p>
<p>If approved, the batch is cleared for packing.</p>	<p>若這批產品通過標準，就可進行包裝。</p>
<p>Packing of Loose Snus</p>	<p>粉末狀口含菸 (snus) 的包裝</p>
<p>Cans are filled in automatic filling machines. Filled cans are sealed with a lid. After lidding all cans are weighed on a check-weigher, which also regulates the filling volume of the cans.</p>	<p>包裝時利用自動裝填機，將產品裝入罐內，使用蓋子密封已裝填的罐子。所有密封的罐子，都將使用秤重計檢查重量，同時管理罐子的裝填量。</p>

<p>Now the cans are labelled in a labelling machine, shrink-sealed in a distribution pack of 10 cans and packed in cases.</p>	<p>最後使用標籤機在罐子上貼上標籤，並使用收縮膜以 10 罐為單位封裝後再裝入紙箱。</p>
<p>Packing of Portion-Packed Snus</p>	<p>袋裝口含菸 (snus) 的包裝</p>
<p>Packing of portion-packed Snus requires a more complicated packaging equipment. Portions are measured and fed into a tube of cellulose fibre.</p> <p>Individual portions are sealed and cut apart.</p> <p>The finished portions are filled in a plastic can and the lid attached. After lidding all cans which pass a check-weigher station are labelled.</p>	<p>包裝袋裝口含菸 (snus) 產品時，需要更為複雜的包裝設備。裝填菸草的袋子要先進行測量，並送入纖維素纖維的包裝管。</p> <p>每個袋子都將密封並切割分離。</p> <p>完成的袋裝產品將裝入塑膠罐，並使用蓋子密封。密封後所有通過秤重計檢測的產品，即可貼上標籤。</p>

Cold storage	冷藏儲存
<p>All finished Snus is kept in a cold storage a few days before it is shipped out to the trade. Keeping Snus cold a certain time after manufacturing is important for the Snus to ripen and obtain its characteristic flavour.</p>	<p>所有的口含菸 (snus) 成品在出貨前，均須以冷藏方式儲存數日。口含菸 (snus) 製造後在冷藏狀態下保持一定時間，可呈現更成熟的特殊口味，這是相當重要的步驟。</p>
<p>Page updated May 9, 2008</p>	<p>頁面更新日期：2008 年 5 月 9 日</p>

GothiaTek® standards	GothiaTek® 標準
Product requirements	產品規範
<div data-bbox="167 421 411 555" data-label="Image"> </div> <p>GothiaTek® limits for undesired components</p>	<div data-bbox="783 421 1027 555" data-label="Image"> </div> <p>GothiaTek® 的不理想成分的上限</p>
<p>Basis for the standard is requirements on maximum allowable limits of certain undesired components in Swedish Snus. These components can be found in nature and therefore exist in various plant species, e.g. tobacco. Some of these components have by scientists been pointed out as potential health risks if they occur in too high concentrations. The GothiaTek® standard stipulates that the following limits must never be exceeded.</p>	<p>本項標準的基準，是針對瑞典口含菸 (snus) 之中特定的不理想成分設定被允許的最高含量。這些成分為天然物質，因此存在於各種不同的植物物種(例如菸草)。科學家指出其中某些成分如果含量過高，可能具有潛在的健康風險。</p> <p>根據 GothiaTek® 標準的規定，那些不理想成分絕對不得超過以下標準限制。</p>
<p>The concentrations of the undesired components are regularly analysed in all products in quality control programs. The average content of each undesired component in snus, manufactured by Swedish Match in 2007, is presented in the table below. The confidence intervals of 95 % are presented within the brackets</p>	<p>所有產品在品質控制計畫中，定期分析其中不良成分的含量。下表顯示 瑞典火柴公司 在 2007 年製造的口含菸 (snus) 產品，其中所含各種不良成分的平均含量。95 % 信賴區間顯示於括弧內。</p>

In the table below, the limits and the average contents are based on moist snus. Because of variations of water content between products a standardized water content of 50 % has been used. In scientific papers concentrations are often based on dry matter. Conversion to dry base is easily done by multiplying the limits in the table by two.

下表顯示的限制標準與平均含量，是以濕式口含菸 (snus) 作為依據。由於產品之間的水份含量不一，因此採用 50 % 的水份含量作為統一標準。在科學論文中，含量通常以乾燥物質作為基準。只要將表中的限制標準乘以 2，即可輕易轉換為乾燥基準。

Component	Limit	Content 2009	Component	Limit	Content 2009
Nitrite (mg/kg)	3.5	1.0 (<0.5 - 1.6)	Cadmium (mg/kg)	0.5	0.3 (0.1 - 0.5)
TSNA (mg/kg)	5	0.8 (0.5 - 1.1)	Lead (mg/kg)	1.0	0.1 (0.07 - 0.2)
NDMA (µg/kg)	5	0.3 (<0.3 - 0.5)	Arsenic (mg/kg)	0.25	0.07 (<0.05 - 0.13)
BaP (µg/kg)	10	0.6 (<0.5 - 0.9)	Nickel (mg/kg)	2.5	0.7 (0.53 - 1.0)
Agrochemicals	According to the Swedish Match Agrochemicals	Below Swedish Match internal limits	Chromium (mg/kg)	1.5	0.4 (0.1 - 0.7)

成分	限制	2009 年含量	成分	限制	2009 年含量
亞硝酸鹽 (mg/kg)	3.5	1.0 (<0.5 - 1.6)	鎘 (mg/kg)	0.5	0.3 (0.1 - 0.5)
TSNA (mg/kg)	5	0.8 (0.5 - 1.1)	鉛 (mg/kg)	1.0	0.1 (0.07 - 0.2)
NDMA (µg/kg)	5	0.3 (<0.3 - 0.5)	砷 (mg/kg)	0.25	0.07 (<0.05 - 0.13)
BaP (µg/kg)	10	0.6 (<0.5 - 0.9)	鎳 (mg/kg)	2.5	0.7 (0.53 - 1.0)

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Legends:
mg/kg = thousandth gram per kilogram product (based on Snus with 50% water content)
µg/kg = millionth gram per kilogram product (based on Snus with 50% water content)

農藥	依據 瑞典 火柴 公司 農藥 管理 計畫	低於 銳點 火柴 公司 內部 限制	鉻 (mg/ kg)	1.5	0.4 (0.1 - 0.7)
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說明：

mg/kg = 每公斤產品的毫克數 (以水份 50% 的 Snus 為基準)

µg/kg = 每公斤產品的微克數 (以水份 50% 的 Snus 為基準)

Declaration of contents	成分聲明
A declaration of contents in accordance with food labelling shall be publicly available for all GothiaTek® products. Substances that are used in the manufacturing of each product shall be listed in declining order of weight. Flavor additives shall be listed as a common group. A list of flavor additives used in Swedish snus by GothiaTec can be found on the page Ingredients in snuff .	所有 GothiaTek® 產品均應依據食品標籤規範，公開標示成分聲明。 各種產品製造時所使用的物質，應根據其重量依序列出 (由重至輕)。 香味料添加物應以共同類別列出。 採用 GothiaTek® 標準製造的瑞典口含菸 (snus)，其中使用的香味料添加物清單可見於以下頁

	面： Ingredients in snuff (此網頁為英文)。
Declaration of certain components	特定成分聲明
The GothiaTek® standard requires that concentrations of the following components in each specific product shall be publicly available:	GothiaTek® 標準規定各產品應公開標示下列成分含量：
<ul style="list-style-type: none"> • Water 	<ul style="list-style-type: none"> • 水份
<ul style="list-style-type: none"> • Nicotine 	<ul style="list-style-type: none"> • 尼古丁
<ul style="list-style-type: none"> • Salt 	<ul style="list-style-type: none"> • 鹽
The concentrations shall be based on the finished product.	含量應以成品為基準。
Manufacturing requirements	製造規範
According to GothiaTek® , the requirements stipulate that the manufacturing process must comply with Swedish law concerning food production and fulfill the requirements of the ISO 9001:2000 quality standard and environmental standard 1401:1996. This entails the following requirements for raw materials, process and hygiene.	依據 GothiaTek® 標準規定，製造程序必須遵循瑞典食品製造法規，並符合 ISO 9001:2000 品質標準以及環境標準 1401:1996，這設定了下列的原料、處理程序及衛生規範。
Raw material requirements	原料規範
<ul style="list-style-type: none"> • Leaf tobacco for Svenskt Snus by the GothiaTek® standard shall be selected so that the limits for undesired components in each specific product are satisfied. Leaf tobacco for Swedish Snus by GothiaTek® must not contain gene 	<ul style="list-style-type: none"> • 依據 GothiaTek® 標準製造的瑞典口含菸 (snus) 應採用精選菸葉，以確保各特定產品都能符

modified tobacco.	<p>合不理想成分的含量限制。依據</p> <p>GothiaTek® 標準製造的瑞典口</p> <p>含菸 (snus)，使用的菸葉不得含有基因改造菸草。</p>
<ul style="list-style-type: none"> According to GothiaTek®, all additives in Swedish snus shall comply with the requirements specified in Swedish Match's ingredients policy. This includes all additives being approved in accordance with the rules and regulations that apply in the countries in which the products are actively marketed. The policy also comprises more stringent internal demands, based on scientific toxicological assessments. Material which is used in packaging of Swedish Snus by GothiaTek® shall be approved for food packaging. 	<ul style="list-style-type: none"> 依據 GothiaTek® 標準，瑞典口含菸 (snus) 使用的所有添加物，均應遵循瑞典火柴公司成分政策所指定的規範。此外，所有添加物亦應遵循產品目前行銷國家之法規，並獲得核准。本政策也依據科學毒物評估資料，制定更為嚴格的內部規範。依據 GothiaTek® 標準製造的瑞典口含菸 (snus)，應使用核可於食品包裝的包裝材料。
Process requirements	處理程序規範
<ul style="list-style-type: none"> Swedish Snus by GothiaTek® shall be heat treated, in a way which is effective enough to kill the natural microbial flora of the tobacco to specified residual bacteria limits ("snus pasteurisation"). 	<ul style="list-style-type: none"> 依據 GothiaTek® 標準製造的瑞典口含菸 (snus)，應進行加熱處理，其效力須足以消滅菸草中

	<p>的天然微生物菌叢，並符合指定的細菌殘餘量標準(以下稱為「口含菸 (snus) 加熱殺菌」)。</p>
<ul style="list-style-type: none"> The manufacturing process shall be performed in a closed system to prevent the product from being contaminated by foreign objects. 	<ul style="list-style-type: none"> 製造程序應於封閉式系統中執行，以避免產品遭到異物污染。
<ul style="list-style-type: none"> The tobacco shall be comminuted in a controlled process. The process must be able to identify and separate any foreign object. 	<ul style="list-style-type: none"> 研磨菸草應採用控管程序，控管程序必須能找出並分離任何異物。
<ul style="list-style-type: none"> Finished Swedish Snus by GothiaTek® shall directly after packaging be brought into a cold storage (max. 8 °C). 	<ul style="list-style-type: none"> 依據 GothiaTek® 標準製造的瑞典口含菸 (snus) 成品，在包裝後應直接冷藏儲存 (最高溫度 8 °C)。
Requirements for sanitation in manufacturing	製造過程之環境衛生規範
<ul style="list-style-type: none"> All exposure of product to an open environment such as filling of product into consumer packages shall be performed in premises which satisfy the sanitation requirements of food manufacturing. These premises shall be controlled with established procedures. 	<ul style="list-style-type: none"> 產品於開放環境的所有接觸 (例如裝填產品至消費者的包裝), 均應於符合食品製造衛生規範的場所進行。這些場所應採用已制定的程序進行控管。

<ul style="list-style-type: none"> Process equipment shall be cleaned and disinfected at least once in every production cycle. 	<ul style="list-style-type: none"> 每次生產週期，處理設備至少要清潔及消毒一次。
<ul style="list-style-type: none"> Packaging machinery shall be cleaned and disinfected at least once every 24 hours during production days. Sanitation control shall be made in accordance with specified procedures. 	<ul style="list-style-type: none"> 在生產工作日期間，包裝機器至少每 24 小時要清潔及消毒一次。環境衛生管制應依據指定步驟進行。
<ul style="list-style-type: none"> Control of water activity, bacteria content and shelf life stability shall be performed on finished products according to specified schedules and procedures. 	<ul style="list-style-type: none"> 成品應依據指定時程與程序，進行水份活動、細菌量以及銷售有效期限的穩定性控管。
<ul style="list-style-type: none"> Purchased packaging material which will have contact with product shall be produced and shipped according to specifications so that contamination of the materials is prevented. Cleanness and sanitation standard of this packaging material shall be controlled according to a specified schedule. 	<ul style="list-style-type: none"> 購買的包裝材料如需與產品接觸，應依據標準製造及運送，以避免材料遭到污染。包裝材料的清潔與衛生標準，應依據指定時程控管。
<ul style="list-style-type: none"> Results of all controls must meet the tolerance limits that are specified for Swedish Snus by GothiaTek®. 	<ul style="list-style-type: none"> 所有控管結果均須符合 GothiaTek® 針對瑞典口含菸 (snus) 所制定的限制標準。
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Snus, nicotine and nicotine addiction	口含菸 (snus)、尼古丁及尼古丁成癮
<p>Snus and other smoke-free tobacco products contain nicotine, which can lead to addiction because of its influence on signal substances in the brain's reward system. In this context, two essential factors are: how much of the nicotine in a snus portion is absorbed by the blood; and the speed with which the nicotine reaches the brain. Genetic factors have also proven to be highly important for the development of nicotine addiction.</p>	<p>口含菸 (snus) 與其他無煙菸草產品都含有尼古丁；尼古丁會影響大腦報償系統的訊號物質，因此得出現成癮的情形。在這種情況下有二項基本因素：袋裝口含菸 (snus) 中血液吸收的尼古丁量，以及尼古丁到達腦部的速度；已獲證實，基因因素也對尼古丁成癮的發展非常重要。</p>
<p>The amount of nicotine absorbed by the individual is determined by complex links between several different but interacting factors. Significant product characteristics include nicotine content, pH values,</p>	<p>個人所吸收尼古丁量的因素，是多項不同但有互動關係因素之間的複雜關聯。重要的產品特性包括尼古丁含量、酸鹼度、水分比例、粒度及物理形式；消費者行為也會影響尼古丁的吸收量。</p>

<p>moisture levels, particle size and physical form. The consumer's behavior also affects how much nicotine is absorbed.</p>	
<p>Swedish snus includes finely ground tobacco with a total nicotine content of about 1.5 to 2.5 percent and it has a pH target value of about 8.5. These levels are traditional for Swedish snus and have remained unchanged for years. However, the pH level of the products declines as they age, meaning concurrently with the storage time. The pH level never increases. In Sweden, snus is stored in coolers before it is sold, which means that the pH levels are more stable than, for example, those of American snuff, which is fermented and is not stored in coolers. For reasons related to process engineering, pH levels are also allowed to vary</p>	<p>瑞典口含菸 (snus) 包含研磨精細的菸草，尼古丁總含量約為 1.5 至 2.5%，而其目標酸鹼度則約為 8.5。這些是瑞典口含菸 (snus) 傳統的產品數據，多年來並未改變，不過產品酸鹼度會隨儲存時間持續下降，但絕不會上升。口含菸 (snus) 在瑞典售出前都儲存於冰箱，因此酸鹼度較其他產品更為穩定，例如發酵且未儲存於冰箱的美洲鼻菸。由於製程工程的相關原因，成品酸鹼度可能出現些許差異。</p>

<p>somewhat in the finished product.</p>	
<p>Of the total nicotine content in snus, it is the “free” unbound nicotine that is most easily absorbed by the oral mucous membranes. The pH value of the snus indicates the proportion of free nicotine versus bound (protonated) nicotine. The proportion of free nicotine tends to increase as pH rises.</p>	<p>在口含菸 (snus) 的總尼古丁含量中, 所謂的「游離」未結合尼古丁最容易由口腔黏膜吸收。口含菸 (snus) 的酸鹼度可推斷游離尼古丁與結合(質子化) 尼古丁的比例。酸鹼度升高時, 游離尼古丁的比例會隨之上升。</p>
<p>From an addiction perspective, the rate at which nicotine is absorbed is essential.</p> <p>The daily total nicotine absorption among snus users is about the same as it is among smokers, but for smokers, the brain is exposed within seconds to extremely high levels of nicotine for every cigarette smoked. This is linked to the rapid transfer of nicotine from cigarette smoke to the blood, which is pumped almost directly</p>	<p>就成癮的觀點而言, 尼古丁的吸收速率是關鍵所在。口含菸 (snus) 使用者每日吸收的總尼古丁量與吸菸者相同, 但對吸菸者而言, 每吸一支香菸, 腦部就會在數秒內暴露於極高濃度的尼古丁中。這是因為香菸煙霧中的尼古丁會快速傳輸至血液中, 幾乎是直接由肺部傳輸至腦部。口含菸 (snus) 使用者首先會由口腔黏膜吸收尼古丁, 而血液並不會直接流向腦部, 而是必須先經過完整的血液循環系統。因此口含</p>

<p>from the lungs to the brain. Among snus users, the nicotine absorption occurs in the oral mucous membranes first. The blood there does not flow directly to the brain; instead, it must first pass through the entire blood circulation system.</p> <p>Accordingly, the nicotine absorption from snus can never be as rapid as it is from smoking. Because snus users and cigarette smokers have about the same total exposure to nicotine, the EU's assessment of the health impacts of smoke-free products (SCENIHR, 2008) includes a discussion of whether the higher nicotine absorption rate from cigarette smoking could mean that cigarettes are more addictive than smoke-free tobacco products.</p>	<p>菸 (snus) 的尼古丁吸收速度絕對不會和吸菸一樣快速。由於口含菸 (snus) 使用者與吸菸者對尼古丁的總暴露量大致相同，因此歐盟在評估無煙產品的健康影響時 (SCENIHR , 2008 年) ，曾討論由於吸菸的尼古丁吸收率較高，是否代表香菸的成癮性高於無煙菸草產品。</p>
<p>For snus, the nicotine absorption process</p>	<p>在口含菸 (snus) 的尼古丁吸收程序中，首</p>

<p>entails that nicotine is extracted from the snus portion and is then absorbed by the blood vessels in the oral mucous membranes. On average, only about 10 to 20 percent of the nicotine content in a snus portion reaches the bloodstream.</p> <p>Absorption studies also show that nicotine absorption varies greatly among individuals. In a study by Lunell and Lunell (2005), blood levels were monitored during a day of controlled usage of snus, and it was observed that the variation in extraction rates among different snus users was 50 to 300 percent greater than the variation from portion to portion in the same snus user. This contributes to the relatively extensive spread in the results for nicotine absorption. The variation in extraction rates in the study can be</p>	<p>先要先從袋裝口含菸 (snus) 釋出尼古丁，然後再由口腔黏膜的血管吸收。袋裝口含菸 (snus) 的尼古丁含量平均只有 10 至 20% 會進入血流中。吸收研究的結果也顯示，個人吸收尼古丁的情形具有相當大的差異。在一項由 Lunell 及 Lunell (2005 年) 進行的研究中，以對照方式使用口含菸 (snus)，並監控使用當天的血液濃度，結果發現不同使用者的釋出率差異，比相同使用者每次使用的差異高出 50 至 300%；這是尼古丁吸收率分佈範圍相當廣大的原因。個人行為也可能是研究報告中釋出率出現差異的部分原因，代表袋裝口含菸 (snus) 的尼古丁濃度可在口中操控並影響釋出的尼古丁量。製造差異及唾液組成也可能是造成差異的部分原因。</p>
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<p>partially attributable to the individual's behavior, meaning the intensity with which the portion is manipulated in the mouth can influence the amount of nicotine extracted. Differences in the production and composition of saliva may also have contributed to the variation.</p>	
<p>Like smokers, snus users may experience abstinence-related problems, caused mainly by nicotine withdrawal, when they stop using snus. Studies conducted in the US have shown that the symptoms are the same for smokers as for users of smoke-free tobacco products, but that users of smoke-free tobacco products experienced depression less frequently (Hatsukami and Severson, 1999).</p>	<p>口含菸 (snus) 使用者和吸菸者一樣，戒除時可能會出現戒除相關問題，主要是停用口含菸 (snus) 時所造成的尼古丁戒斷所造成。在美國進行的研究顯示，吸菸者與無煙菸草產品使用者的症狀相同，但無煙菸草使用者出現憂鬱的情形較少 (Hatsukami 及 Severson, 1999 年)。</p>
<p>In a study by Holm et al. (1992), smokers and snus users were asked to answer</p>	<p>在 Holm 等人 (1992 年) 進行的研究中，要求吸菸者與口含菸 (snus) 使用者回答</p>

<p>questions about their tobacco habits and various measures of subjective nicotine addiction. No differences were revealed between the snus users and the smokers in terms of self-experienced addiction, the need for tobacco and difficulties in cessation of tobacco use. This result was later confirmed in a snus withdrawal study by Gilljam et al. (2003), which showed equivalent results for snus users and smokers.</p>	<p>菸草使用習慣的問題，並以多種方式測量主觀的尼古丁成癮情形。在自我體驗成癮、菸草需求、戒斷菸草困難等方面，口含菸 (snus) 使用者與吸菸者之間並未出現差異。之後 Gilljam 等人 (2003 年) 進行的口含菸 (snus) 戒斷研究也證實這項結果，顯示口含菸 (snus) 使用者與吸菸者的結果相同。</p>
<p>Many ex-smokers who now use snus feel that it was less difficult to switch from cigarettes to snus than it is to switch from snus to “nothing”. It is likely that such experiences have contributed to the misconception that snus results in a stronger nicotine addiction than smoking does. A more likely explanation is that it is</p>	<p>許多目前使用口含菸 (snus) 的前吸菸者認為，從香菸改用口含菸 (snus) 要比從口含菸 (snus) 完全戒斷來的容易。這類經驗很可能造成誤導，讓人認為口含菸 (snus) 的尼古丁成癮性比吸菸還要強。另一種比較可能的說法是，完全停止使用尼古丁比改用不同菸品更為困難。</p>

<p>more difficult to stop using nicotine completely than it is to switch between different tobacco products.</p>	
<p>Nicotine addiction caused by tobacco are not governed by product characteristics and consumer behavior alone. Hereditary factors may also be highly significant. In a study by True et al. (1997) that included identical and fraternal twins, it was observed that 50 percent of the probability that an individual would begin smoking could be explained in terms of hereditary factors, and that continued smoking was determined by genetic background to an even greater extent (70 percent). Genetic differences in the ability to release dopamine and other signal substances in the brain could be part of the explanation for these results.</p>	<p>菸草所造成的尼古丁成癮性並不只受產品特性及消費者行為影響，遺傳因素也可能非常重要。在 True 等人 (1997 年) 進行的研究中 (受試者包含同卵與異卵雙胞胎) ，顯示有 50% 的機率，個人可能因為遺傳因素而開始吸菸，而持續吸菸則受到基因背景更大的影響 (70%) 。腦部釋放多巴胺與其他訊號物質能力的基因差異，可能是造成上述結果的部分原因。</p>

<p>To sum up, it is evident that a specific nicotine content in a snus product with a specific proportion of free nicotine (depending on the pH level) does not result in a given nicotine absorption in an individual snus user. Rather, there is extensive individual variation. In a snus user, nicotine absorption can also vary from portion to portion. Other product characteristics and consumer behavior that is partially determined by underlying genetic factors also play a major role.</p>	<p>總而言之，口含菸 (snus) 產品的特定尼古丁含量，在特定比例的游離尼古丁情況下（需視酸鹼度而定），不會讓個人口含菸 (snus) 使用者出現特定的尼古丁吸收率；相反地，每個人的差異情形非常大。口含菸 (snus) 使用者在每次使用時，尼古丁的吸收情形也可能不同。其他產品特性及受到潛在基因因素部分影響的消費者行為也扮演重要角色。</p>
<p>REFERENCES</p> <p>Andersson, G., Björnberg, G., and Curvall, M. 1994. Oral mucosal changes and nicotine disposition in users of Swedish smokeless tobacco products: A comparative study. J. Oral Pathol. Med. 23:161-167.</p> <p>Andersson, G., Axéll, T., and Curvall, M. 1995. Reduction in nicotine intake and oral mucosal changes among users of Swedish oral moist snuff after switching to a low-nicotine product. J. Oral Pathol. Med. 24:244-250.</p> <p>Gilljam, H., Rankka, M., and Langworth, S. 2003. Smokeless tobacco cessation with</p>	<p>參考文獻</p> <p>Andersson, G., Björnberg, G., and Curvall, M. 1994. Oral mucosal changes and nicotine disposition in users of Swedish smokeless tobacco products: A comparative study. J. Oral Pathol. Med. 23:161-167.</p> <p>Andersson, G., Axéll, T., and Curvall, M. 1995. Reduction in nicotine intake and oral mucosal changes among users of Swedish oral moist snuff after switching to a low-nicotine product. J. Oral Pathol. Med. 24:244-250.</p>

<p>NRT: a feasibility study. Poster at the Fifth European Conference of the Society for Research on Nicotine and Tobacco, Padova, Italy.</p> <p>Hatsukami, DK., and Severson, HH. 1999. Oral spit tobacco: addiction, prevention and treatment. <i>Nicotine Tob. Res.</i> 1:21-44.</p> <p>Holm, H., Jarvis, M.J., Russell, M.A.H., and Feyerabend, C. 1992. Nicotine intake and dependence in Swedish snuff takers. <i>Psychopharmacology</i> 108:507-511.</p> <p>Lund, KE. 2008. Presentation at the 51st Conference of the International Council on Alcohol and Addictions.</p> <p>Lunell, E. and Lunell, M. 2005. Steady-state nicotine plasma levels following use of four different types of Swedish snus compared with 2-mg Nicorette chewing gum: A crossover study. <i>Nic. Tob. Res.</i> 7:397-403.</p> <p>Ramström, L.M. and Foulds, J. 2006. Role of snus in initiation and cessation of tobacco smoking in Sweden. <i>Tobacco Control</i> 15:210-214.</p> <p>SCENIHR Report: Health effects of smokeless tobacco products, 2008</p> <p>True, WR., Heath, AC., Scherrer, JF., Waterman, B., Goldberg, J., Lin, N., Eisen, SA., Lyons, MJ., and Tsuang, MT. 1997. <i>Addiction</i> 92:1277-1287.</p>	<p>Gilljam, H., Rankka, M., and Langworth, S. 2003. Smokeless tobacco cessation with NRT: a feasibility study. Poster at the Fifth European Conference of the Society for Research on Nicotine and Tobacco, Padova, Italy.</p> <p>Hatsukami, DK., and Severson, HH. 1999. Oral spit tobacco: addiction, prevention and treatment. <i>Nicotine Tob. Res.</i> 1:21-44.</p> <p>Holm, H., Jarvis, M.J., Russell, M.A.H., and Feyerabend, C. 1992. Nicotine intake and dependence in Swedish snuff takers. <i>Psychopharmacology</i> 108:507-511.</p> <p>Lund, KE. 2008. Presentation at the 51st Conference of the International Council on Alcohol and Addictions.</p> <p>Lunell, E. and Lunell, M. 2005. Steady-state nicotine plasma levels following use of four different types of Swedish snus compared with 2-mg Nicorette chewing gum: A crossover study. <i>Nic. Tob. Res.</i> 7:397-403.</p> <p>Ramström, L.M. and Foulds, J. 2006. Role of snus in initiation and cessation of tobacco smoking in Sweden. <i>Tobacco Control</i> 15:210-214.</p> <p>SCENIHR Report: Health effects of smokeless tobacco products, 2008</p> <p>True, WR., Heath, AC., Scherrer, JF., Waterman, B., Goldberg, J., Lin, N., Eisen, SA., Lyons, MJ., and Tsuang, MT. 1997. <i>Addiction</i> 92:1277-1287.</p>
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<p>Tobacco use in Sweden</p>	<p>瑞典的菸品使用情形</p>
<ul style="list-style-type: none"> • Surveys of tobacco consumption in Europe show that the situation in Sweden is unique. • Swedes currently smoke the least in Europe, and they use Swedish snus. • Snus is used as a method to quit smoking. 	<ul style="list-style-type: none"> • 根據歐洲的菸草消費調查顯示，瑞典的情況相當獨特。 • 瑞典人目前在歐洲的吸菸比例最低且使用瑞典口含菸(snus)。 • 口含菸(snus)被視為做為戒菸的方法。
<p>How much smoking is done in Sweden compared with other countries?</p>	<p>相較於其他國家，瑞典的吸菸情形如何？</p>
<p>Smoking is considerably less widespread among Swedish adults than in most other EU countries. In 2007, 14 percent of adult Swedes smoked, while smoking in the</p>	<p>瑞典成年人的吸菸比例明顯低於其他大部分的歐盟國家。在 2007 年有 14% 的瑞典成人吸菸，而其他歐盟國家的比例則介於 21 至 44% 之間 (WHO 2008 年及各國有關單位資料)</p>

<p>remaining EU countries varied between 21 and 44 percent (WHO 2008 and national authorities). There could be several other contributing factors to this difference, but snus is a unique phenomenon in Sweden.</p>	<p>。可能有多種其他因素造成這項差異，但口含菸 (snus) 是瑞典的一種獨特現象。</p>
<p>Is tobacco consumption gender specific?</p>	<p>菸品消費是否有性別差異？</p>
<p>Yes, adult men smoke less than adult women in Sweden. On the other hand, snus consumption is very common among Swedish men but quite unusual among women. In 2007, 12 percent of the male population smoked on a daily basis compared with 19 percent that consumed snus. Among Swedish women, 16 percent smoked on a daily basis, while 4 percent used snus. (FHI 2007).</p>	<p>是的，瑞典成年男性的吸菸率低於成年女性。另一方面，瑞典男性使用口含菸 (snus) 的情形非常普遍，但女性則相當少見。在 2007 年有 12% 的男性族群每日吸菸，而有 19% 使用口含菸 (snus)。瑞典女性有 16% 每日吸菸，而有 4% 使用口含菸 (snus)。(FHI 2007)。</p>

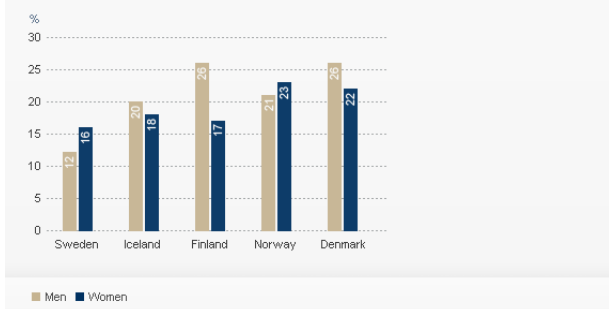
<p>Has snus contributed to the decrease in smoking in Sweden in recent decades?</p>	<p>近年來瑞典吸菸率下降是否與口含菸 (snus) 有關？</p>
<p>In a status report on public health, the Swedish Board of Health and Welfare states: "However, the question is what advice should be given to those who cannot quit smoking by other means. Should they switch to snus? By using the panel data from Statistics Sweden's surveys concerning living conditions in which the same people were interviewed in 1988-1989 as in 1996-1997, we have shown that for each person who switched from snus to smoking, approximately four persons switched from smoking to</p>	<p>瑞典健康福利部 (Swedish Board of Health and Welfare) 在一份公共衛生狀態報告中指出：「不過對於無法利用其他方式戒菸的人而言，問題在於要提供什麼建議。他們應該改用口含菸 (snus) 嗎？瑞典統計局 (Statistics Sweden) 曾針對 1988 至 1989 年及 1996 至 1997 年間訪談過的相同對象，調查其生活狀況；我們利用這份資料，發現由口含菸 (snus) 改為吸菸的人數，與吸菸改用口含菸 (snus) 人數之間的比例約為 1:4。顯然許多人已使用口含菸 (snus) 做為戒菸方法。」</p>

snus. Obviously, many have used snus as a method for quitting smoking.”	
What tobacco habits do young Swedes have?	瑞典青年使用菸品的習慣為何？
<p>Among young men between 16-29 years, only 9 percent smoke on a daily basis and among those in the 30-44 age group, only 10 percent smoke. This is record low and may be compared with around 20-40 percent daily smokers in the 15-24 age group in Europe. However, it should be added that slightly more than 20 percent of Swedish men in the 16-44 age group use snus on a daily basis.</p> <p>Even among women, younger Swedes smoke less than older ones.</p>	<p>在 16 至 29 歲的青年中，只有 9% 每日吸菸，在 30 至 44 歲族群中，只有 10% 吸菸。這項數據創下最低記錄，並可與歐洲地區 15 至 24 歲族群 20 至 40% 的每日吸菸者進行比較。</p> <p>不過 16 至 44 歲族群的瑞典男性，每日使用口含菸 (snus) 的比例則稍微超過 20%。</p> <p>即使是女性，年輕族群的吸菸比例也低於年長者。16 至 29 歲族群中有 14% 每日吸菸，30 至 44 歲族群為 13%，45 至 64 歲每日吸菸的比例則為 22%。16 至 29 歲的最年輕女性中，</p>

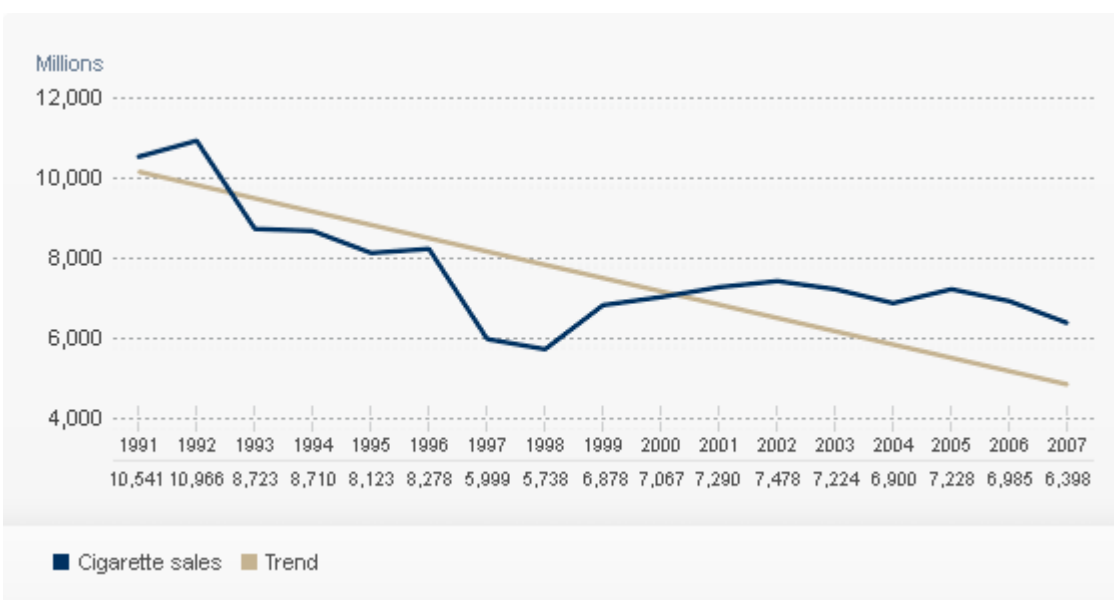
<p>In the 16-29 age group, 14 percent smoke on a daily basis and in the 30 – 44 age group the figure is 13 percent, which can be compared with 22 percent daily smokers among women aged 45 – 64. Of the youngest women, aged 16 – 29 years, 5 percent used snus on a daily basis, while the figure for the 30 – 64 age group was 4 percent.</p> <p>Among young European women, aged 15-24 years, smoking habits vary strongly; the lowest proportion is in Romania with 9 percent daily smokers and the highest in Austria, with 37 percent.</p>	<p>有 5% 每日使用口含菸 (snus), 而 30 至 64 歲族群則為 4%。</p> <p>15 至 24 歲的年輕歐洲女性，抽煙習慣的差異相當大；比例最低是羅馬尼亞有 9% 的每日吸菸者，比例最高則是奧地利的 37%。</p>
<p>REFERENCES</p> <p>The National Institute of Public Health, FHI, 2007</p> <p>Public Health. Situation Report 2005, page 24-25.</p>	<p>參考文獻</p> <p>The National Institute of Public Health, FHI, 2007</p> <p>Public Health. Situation Report 2005,</p>

<p>European Commission, Eurostat. World Health Organization. 2008. Tobacco Control Database. Latest available figures: March 2008. http://data.euro.who.int/Default.aspx?TabID=2444 National statistic authorities</p>	<p>page 24-25. European Commission, Eurostat. World Health Organization. 2008. Tobacco Control Database. Latest available figures: March 2008. http://data.euro.who.int/Default.aspx?TabID=2444 National statistic authorities</p>
<p>Page updated May 9, 2008</p>	<p>頁面更新日期：2008 年 5 月 9 日</p>

<p>Snus use in figures</p>	<p>有關口含菸 (snus) 使用情形的數據</p>
<p>Swedes smoke the least and use the most snus</p>	<p>瑞典人的吸菸率最低但使用最多的口含菸 (snus)</p>
<p>Sweden was the first country in the Western World to achieve the WHO's goal that the proportion of regular smokers should be lower than 20 percent of the adult population. There are considerable differences in smoking habits, even compared with Sweden's neighboring countries, particularly as regards men. This can largely be ascribed to the use of snus. Of the Swedish men, 16-84 years, 12 percent smoked on a daily basis and</p>	<p>瑞典是西方世界第一個國家達到世界衛生組織 (WHO) 設定的目標，將成年人經常吸菸的比例降到 20% 以下。即使與鄰近國家比較，瑞典的吸菸習慣仍然大不相同，特別是男性族群；使用口含菸 (snus) 可能是其中最主要的原因。根據 2007 年的資料，16 至 84 歲的瑞典男性有 12% 每日吸菸，並有 19% 每日使用 snus；女性的每日吸菸者有 16%，並有 4% 每日使用 snus。</p>

19 percent used snus daily in 2007.																			
Of the women, 16 percent smoked daily and 4 percent used snus on a daily basis.																			
The proportion of daily smokers in the Nordic Region in 2007 men and women	2007 年北歐地區男性及女性的每日吸菸者比例																		
<div><table><thead><tr><th>Country</th><th>Men (%)</th><th>Women (%)</th></tr></thead><tbody><tr><td>Sweden</td><td>12</td><td>16</td></tr><tr><td>Iceland</td><td>20</td><td>18</td></tr><tr><td>Finland</td><td>26</td><td>17</td></tr><tr><td>Norway</td><td>21</td><td>23</td></tr><tr><td>Denmark</td><td>26</td><td>22</td></tr></tbody></table></div>		Country	Men (%)	Women (%)	Sweden	12	16	Iceland	20	18	Finland	26	17	Norway	21	23	Denmark	26	22
Country	Men (%)	Women (%)																	
Sweden	12	16																	
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Denmark	26	22																	
Sweden 16-84 yr, Iceland 15-89 yr, Finland 15-64 yr, Norway 16-74 yr and Denmark 13 yr and older.	瑞典 16 至 84 歲、冰島 15 至 89 歲、芬蘭 15 至 64 歲、挪威 16 至 74 歲，以及丹麥 13 歲以上。																		
Sources: Central statistical bureaus in the Nordic region. The Swedish Institute of Public Health, survey spring 2006.	資料來源：北歐地區中央統計局 (Central statistical bureaus in the Nordic region)。瑞典公共衛生研究院 (The Swedish Institute of Public Health)，2006 年春季調查。																		
Smoking habits in	2007 年瑞典 16 至 84																		

Sweden 2007, 16-84 years	歲的吸菸習慣
In spring 2007, 12% of Swedish men smoked on a daily basis (433,000) and just as many smoked occasionally; a total of 24%, or 866,000. Among women, 16% smoked daily (580,000) and 8% occasionally (290,000); a total of 24% or 870,000.	2007 年春季有 12% 的瑞典男性每日吸菸 (433,000)，並有同樣比例的人偶爾吸菸，總共為 24% (866,000)；女性有 16% 每日吸菸 (580,000)，8% 偶爾吸菸 (290,000)，總共為 24% (870,000)。
Source: Swedish Institute of Public Health, FHI, and Statistics Sweden, SCB.	資料來源：瑞典公共衛生研究院 (Swedish Institute of Public Health)、FHI 及瑞典統計局 (Statistics Sweden)、SCB。
Volume changes for cigarettes	香菸銷售量的變化
Viewed over a longer period, cigarette sales in Sweden have decreased continuously. During 1999–2002,	長期以來瑞典的香菸銷售量持續下滑。在 1999 至 2002 年期間，香菸銷售量微幅上升，原因可能是 1998 年 8

<p>cigarette sales increased slightly, probably due to the tax reduction that came into effect on August 1, 1998 causing a transition from illegal to legal sales as well as to a transfer from rolled tobacco to factory-made cigarettes.</p>	<p>月 1 日生效的減稅方案，造成由非法產品轉為購買合法產品，以及由自捲菸草轉為購買工廠生產的香菸。</p>																																				
<p>Cigarette sales, millions, with trend line</p>	<p>香菸銷售量 (單位：百萬包) 及趨勢線</p>																																				
 <table border="1"> <thead> <tr> <th>Year</th> <th>Cigarette sales (millions)</th> </tr> </thead> <tbody> <tr><td>1991</td><td>10,541</td></tr> <tr><td>1992</td><td>10,966</td></tr> <tr><td>1993</td><td>8,723</td></tr> <tr><td>1994</td><td>8,710</td></tr> <tr><td>1995</td><td>8,123</td></tr> <tr><td>1996</td><td>8,278</td></tr> <tr><td>1997</td><td>5,999</td></tr> <tr><td>1998</td><td>5,738</td></tr> <tr><td>1999</td><td>6,878</td></tr> <tr><td>2000</td><td>7,067</td></tr> <tr><td>2001</td><td>7,290</td></tr> <tr><td>2002</td><td>7,478</td></tr> <tr><td>2003</td><td>7,224</td></tr> <tr><td>2004</td><td>6,900</td></tr> <tr><td>2005</td><td>7,228</td></tr> <tr><td>2006</td><td>6,985</td></tr> <tr><td>2007</td><td>6,398</td></tr> </tbody> </table>		Year	Cigarette sales (millions)	1991	10,541	1992	10,966	1993	8,723	1994	8,710	1995	8,123	1996	8,278	1997	5,999	1998	5,738	1999	6,878	2000	7,067	2001	7,290	2002	7,478	2003	7,224	2004	6,900	2005	7,228	2006	6,985	2007	6,398
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<p>Source: Swedish Match/National Tax Board</p>	<p>資料來源：Swedish Match/國稅局 (National Tax Board)</p>																																				
<p>Snus habits in Sweden</p>	<p>2007 年瑞典 16 至 84</p>																																				

2007, 16-84 years	歲的口含菸 (snus) 使用習慣
In 2007, the number of snus users (between 16-84 years) totaled approximately 1.2 million, of whom women accounted for one fifth (see below). The number of daily snus users was 831,000. Of the men, 19 percent used snus on a daily basis (685,000) and 7 percent occasionally (253,000).	在 2007 年，口含菸 (snus) 使用者 (介於 16 至 84 歲) 總人數約 120 萬，女性則佔其中的 1/5 (請參閱下方資料)。每日使用口含菸 (snus) 的人數為 831,000。男性有 19 % 每日使用口含菸 (snus) (685,000)，有 7% 偶爾使用 (253,000)。
Source: Swedish Institute of Public Health, FHI, and Statistics Sweden, SCB.	資料來源：瑞典公共衛生研究院 (Swedish Institute of Public Health)、FHI 及瑞典統計局 (Statistics Sweden)、SCB。
Volume changes for snus	口含菸 (snus) 的銷售量變化
For a long time, snus sales increased while cigarette sales decreased.	長期以來口含菸 (snus) 的銷售持續上揚，而香菸銷售則持續下降。不過 2007

<p>During 2007, this pattern was broken; both cigarette and snus sales in Sweden declined. A key reason for the sales decrease for snus was that the tobacco tax was increased twice, in January 2006 and 2007, by a total of 173 percent. The tax increases generated significant hoarding, an increase in tax-free sales and a switch from loose snus to portion-packed snus.</p>	<p>年則打破這個模式，瑞典香菸與口含菸 (snus) 的銷售同步下降。口含菸 (snus) 銷售下降的關鍵所在，就是菸草稅在 2006 及 2007 年二次調漲，總幅度達 173%。由於稅率增加，因此出現大量的囤積情形，免稅商店的銷售量上升，而消費者也由散裝口含菸 (snus) 轉為使用袋裝口含菸 (snus)。</p>
<p>Hoarding in December 2006 is estimated to have amounted to approximately 13 million cans, while hoarding in December 2007 is estimated at about 5 million cans. Swedish Match's share of the snus market (calculated in cans) amounted to approximately 90 percent in 2007.</p>	<p>2006 年 12 月的囤積數量為 1300 萬罐，2007 年 12 月的囤積數量則預估為 5 百萬罐。瑞典火柴公司的口含菸 (snus) 市佔率(以罐計算)在 2007 年約為 90%。</p>

Snus sales, millions of cans, with trend line	口含菸 (Snus) 銷售數據 (單位 : 百萬罐) 及趨向線																																																						
<div><div>Millions of cans</div><table><thead><tr><th>Year</th><th>Snus sales, millions of cans</th><th>Trend</th></tr></thead><tbody><tr><td>1991</td><td>115</td><td>115</td></tr><tr><td>1992</td><td>119</td><td>119</td></tr><tr><td>1993</td><td>120</td><td>120</td></tr><tr><td>1994</td><td>127</td><td>127</td></tr><tr><td>1995</td><td>132</td><td>132</td></tr><tr><td>1996</td><td>140</td><td>140</td></tr><tr><td>1997</td><td>135</td><td>145</td></tr><tr><td>1998</td><td>139</td><td>150</td></tr><tr><td>1999</td><td>151</td><td>155</td></tr><tr><td>2000</td><td>167</td><td>160</td></tr><tr><td>2001</td><td>175</td><td>165</td></tr><tr><td>2002</td><td>187</td><td>170</td></tr><tr><td>2003</td><td>195</td><td>175</td></tr><tr><td>2004</td><td>200</td><td>180</td></tr><tr><td>2005</td><td>204</td><td>185</td></tr><tr><td>2006</td><td>220</td><td>190</td></tr><tr><td>2007</td><td>195</td><td>195</td></tr></tbody></table><div>■ Snus sales, millions of cans ■ Trend</div></div>		Year	Snus sales, millions of cans	Trend	1991	115	115	1992	119	119	1993	120	120	1994	127	127	1995	132	132	1996	140	140	1997	135	145	1998	139	150	1999	151	155	2000	167	160	2001	175	165	2002	187	170	2003	195	175	2004	200	180	2005	204	185	2006	220	190	2007	195	195
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How many people use snus?	有多少人使用口含菸 (snus) ?																																																						
<p>The number of snus users (between ages 16 and 84) amounted to 1.2 million in 2007, of whom one in five was a woman (see below). The number of daily snus users was 831,000. Of the men, 19% used snus on a daily basis (686,000) and 7% occasionally (253,000).</p>	<p>2007年的口含菸 (snus) 使用人數 (介於 16 歲至 84 歲之間) 為 120 萬人 , 其中女性佔 1/5 (請參閱下方資料) 。每日使用口含菸 (snus) 的人數為 831,000。男性有 19% 每日使用口含菸 (snus) (686,000), 有 7% 偶爾使用 (253,000)。</p>																																																						

Source: Swedish Institute of Public Health, FHI, and Statistics Sweden, SCB.	資料來源：瑞典公共衛生研究院 (Swedish Institute of Public Health)、FHI 及瑞典統計局 (Statistics Sweden)、SCB。
Flows and age structure	走向與年齡結構
Increasing numbers of smokers are choosing to switch to snus. Of those that use snus on a daily basis, 47% are former smokers. The flow in the other direction – from snus to daily use of cigarettes – is considerably lower. Of the daily smokers, 7% are former snus users.	有越來越多的吸菸者選擇改用口含菸 (snus)。在每日使用口含菸 (snus) 的使用者中, 有 47% 原本是吸菸者, 反向轉換的比例 (由口含菸 (snus) 改為每日吸菸) 則明顯較低; 在每日吸菸者中, 有 7% 原本是口含菸 (snus) 使用者。
Cigarette smoking ==> snus = 47% Snus ==> cigarette smoking = 7%	吸菸 ==> 口含菸 snus = 47% 口含菸 snus ==> 吸菸 = 7%
The average age of daily snus users is 40 years among men and 39 among women.	每日使用口含菸 (snus) 使用者的平均年齡為 40 歲 (男性) 及 39 歲 (女性)。
Source: Temo/Synovate*	資料來源：Temo/Synovate*

Viewed over a ten-year period, the percentage of all snus users in the older age groups has increased, while that in the younger age groups has decreased.	過去十年間，年長族群的所有口含菸 (snus) 使用者比例上升，而年輕族群比例則下降。																														
<table><tr><td></td><td>1995</td><td>2006</td></tr><tr><td>16-29 år</td><td>33 %</td><td>25 %</td></tr><tr><td>30-49 år</td><td>45 %</td><td>48 %</td></tr><tr><td>50-75 år</td><td>22 %</td><td>24 %</td></tr><tr><td>16-75 år</td><td>100 %</td><td>100 %</td></tr></table> <p>Source: Temo 1995 and 2005/2006*</p>		1995	2006	16-29 år	33 %	25 %	30-49 år	45 %	48 %	50-75 år	22 %	24 %	16-75 år	100 %	100 %	<table><tr><td></td><td>1995 年</td><td>2006 年</td></tr><tr><td>16-29 歲</td><td>33%</td><td>25%</td></tr><tr><td>30-49 歲</td><td>45%</td><td>48%</td></tr><tr><td>50-75 歲</td><td>22%</td><td>24%</td></tr><tr><td>16-75 歲</td><td>100%</td><td>100%</td></tr></table> <p>資料來源：Temo 1995 及 2005/2006*</p>		1995 年	2006 年	16-29 歲	33%	25%	30-49 歲	45%	48%	50-75 歲	22%	24%	16-75 歲	100%	100%
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Women snus consumers	女性口含菸 (snus) 消費者																														
The number of women in Sweden (16-84 years) that use snus has increased more than fivefold since 1988/1989. At that time, 44,000 admitted to using snus (0.6% daily	瑞典女性 (16 至 84 歲) 使用口含菸 (snus) 的人數自 1988/1989 年以來已增加 5 倍以上。當時有 44,000 名女性承認使用口含菸 (snus)(0.6% 每日使用，0.7% 偶爾使用)。瑞典公共																														

and 0.7% occasionally). When the Swedish Institute of Public Health, FHI, conducted a survey of tobacco habits in spring 2007, 4% of the women admitted to using snus on a daily basis and 3% occasionally; a total of 255,000 women.	衛生研究院 (Swedish Institute of Public Health) 及 FHI 在 2007 年春季進行菸草習慣調查時，有 4% 的女性承認每日使用口含菸 (snus)，並有 3% 表示偶爾使用，總人數達 255,000 人。																
The number of women snus users, 16-84 years	女性的口含菸 (snus) 使用人數 (16 至 84 歲)																
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Among women snus users (daily), the	口含菸 (snus) 的女性使用者 (每日)																

<p>number of former smokers is 59%.</p> <p>The flow in the other direction – from snus to daily use of cigarettes – is 3%.</p>	<p>有 59% 過去是吸菸者， 反向轉換的比例 (由口含菸 (snus) 改為每日吸菸) 則為 3%。</p>
<p>Cigarette smoking ==> snus = 59%</p> <p>Snus ==> cigarette smoking = 3%</p>	<p>吸菸 ==>口含菸 snus = 59%</p> <p>口含菸 snus ==> 吸菸 = 3%</p>
<p>Source: Temo/Synovate*</p>	<p>資料來源：Temo/Synovate*</p>
<p>Success factor in smoking cessation</p>	<p>戒菸的成功因素</p>
<p>Several surveys have confirmed the role of snus in helping people to stop smoking. The Cancer Fund and pharmaceutical company, Pharmacia, conducted a survey in 2001 among those who were successful in quitting smoking and found that 33% used snus when trying to stop, compared with 17% that used nicotine aids.</p> <p>Other surveys have reported similar results.</p>	<p>多項研究已證實口含菸 (snus) 在協助戒菸時所扮演的角色。癌症基金會 (Cancer Fund) 與製藥公司 Pharmacia 在 2001 年進行的研究顯示，成功戒菸者有 33% 在戒菸時使用口含菸 (snus), 使用尼古丁協助者則有 17%；其他調查也提出類似結果。</p>

Source: Cancer Fund/Pharmacia 2001

資料來源：癌症基金會 (Cancer Fund)/Pharmacia 2001)

Proportion of daily smokers in the Nordic region in a European perspective

以歐洲觀點探討北歐地區的每日吸菸者比例

Men		Women		Total	
Sweden	13	Portugal	9 (1)	Sweden	15
Iceland	19	Cyprus	10	Iceland	19
Switzerland	24	Lithuania	14	Portugal	20 (1)
Ireland	24	Slovakia	15	Finland	22
Finland	26	Sweden	17	Switzerland	22
Norway	26	Italy	17	Malta	23
UK	27 (1)	Finland	18	Cyprus	24
Denmark	28	Malta	18	Italy	24
Slovenia	28	Latvia	18	Slovenia	24
Malta	30	Island	19	Ireland	24
Belgium	30	Switzerland	20	Norway	25

男性		女性		總比例	
瑞典	13	葡萄牙	9 (1)	瑞典	15
冰島	19	賽普勒斯	10	冰島	19
瑞士	24	立陶宛	14	葡萄牙	20 (1)
愛爾蘭	24	斯洛伐克	15	芬蘭	22
芬蘭	26	瑞典	17	瑞士	22
挪威	26	義大利	17	馬爾他	23
英國	27 (1)	芬蘭	18	賽普勒斯	24

		and			
Netherlands	31	Slovenia	20	Denmark	25
Czech Republic	31	Czech Republic	20	Czech Republic	25
Italy	31	Estonia	21	UK	25 (1)
Portugal	33 (1)	Denmark	23	Lithuania	27
France	33	Norway	24	Belgium	27
Germany	37 (1)	Ireland	24	Estonia	28
Poland	38	UK	24 (1)	Netherlands	28
Cyprus	38	Belgium	25	Latvia	30
Luxembourg	39	Netherlands	25	France	30
Spain	39	Spain	25	Slovakia	32
Lithuania	39	France	26	Spain	32
Hungary	40	Poland	26	Poland	32
Slovakia	41	Luxembourg	26	Luxembourg	33
Estonia	42	Hungary	28	Hungary	34
Greece	47	Greece	29	German	34

				斯	
丹麥	28	馬爾他	18	義大利	24
斯洛維尼亞	28	拉脫維亞	18	斯洛維尼亞	24
馬爾他	30	冰島	19	愛爾蘭	24
比利時	30	瑞士	20	挪威	25
荷蘭	31	斯洛維尼亞	20	丹麥	25
捷克共和國	31	捷克共和國	20	捷克共和國	25
義大利	31	愛沙尼亞	21	英國	25 (1)
葡萄牙	33 (1)	丹麥	23	立陶宛	27
法國	33	挪威	24	比利時	27
德國	37 (1)	愛爾蘭	24	愛沙尼亞	28

			y	(1)	
Latvia	47	Germany	30 (1)	Greece	38
Austria	48 (1)	Austria	46 (1)	Austria	47 (1)

波蘭	38	英國	24 (1)	荷蘭	28
賽普勒	38	比利時	25	拉脫維亞	30
斯					
盧森堡	39	荷蘭	25	法國	30
西班牙	39	西班牙	25	斯洛伐克	32
立陶宛	39	法國	26	西班牙	32
匈牙利	40	波蘭	26	波蘭	32
斯洛伐克	41	盧森堡	26	盧森堡	33
愛沙尼亞	42	匈牙利	28	匈牙利	34
希臘	47	希臘	29	德國	34 (1)
拉脫維亞	47	德國	30 (1)	希臘	38
奧地利	48 (1)	奧地利	46 (1)	奧地利	47 (1)

資料來源：世界衛生組織 (WHO) 歐洲

	<p>區辦公室</p> <p>(http://data.euro.who.int/Default.aspx?TabID=2444)，可取得的最新資料為 2006 年 3 月，以及北歐國家 2005 年的官方統計資料。瑞典公共衛生研究院 (Swedish Institute of Public Health) 2005 年春季調查。</p>
<p>Sources: WHO, Regional Office for Europe</p> <p>(http://data.euro.who.int/Default.aspx?TabID=2444), most recent data available, March 2006, and official statistics for the Nordic countries 2005. Swedish Institute of Public Health, survey spring of 2005.</p> <p>The figures shall be used with caution since the surveys were not conducted during the same year and the age groups vary.</p>	<p>由於調查並非在同一年進行，且年齡層也各不相同，因此使用以上數據時應謹慎小心。</p>

<p>(1) Other definition than daily smoker; for example, regular smokers is the term used by the four countries marked with (1).</p>	<p>(1) 每日吸菸者以外的其他定義，例如四個國家 (標記 (1)) 所使用的經常吸菸者。</p>
<p>*) Source: Temo/SynovatePertains to Temo/Synovate's postal omnibus for 2005/2006, in which approximately 12,000 people between the ages of 16 and 75 responded to questions on their smoking habits and Temo/Synovate's postal consumer survey during the years 1995 – 2005/2006 (pertaining to women snus users). Statistically, the survey comprised approximately 6.4 million Swedes.</p>	<p>*資料來源：Temo/SynovatePertains 至 Temo/Synovate 的郵寄綜合調查 (2005/2006)，約有 12,000 名 16 至 75 歲的人回答有關吸菸習慣的問題，以及 Temo/Synovate 在 1995 至 2005/2006 年間的郵寄消費者調查(有關女性口含菸 (snus) 使用者)。統計上調查包括約 640 萬名瑞典人。</p>
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