

Burning incense. How safe is it?

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Abstract: The potential harmful effects of burning incense are discussed based on reports in the literature from 1994 to 2008 [1-5].
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Introduction

Burning incense is an age old practice that spans many centuries. Reasons for this practice range from spiritual to personal. In many instances hundreds of incense sticks are burned in confined spaces, such as churches and temples. Since there is a great deal of smoke generated in confined areas it is not surprising that concerns have been raised regarding the possible harmful effects this practice could have on people exposed to burning incense [1-5]. Apart from the spiritual and religious use of incense it also gives a room or area a sweet scent since it is usually derived from fragrant tree bark, resins, roots, flowers, and essential oils.

Burning incense and its effects on health

In 1994 researchers highlighted a possible causal link between nasopharyngeal cancer and the burning of incense for daily worshipping of deities by Chinese persons [1]. Furthermore the researchers noted that epidemiological studies showed a correlation between burning incense and a high risk of childhood brain tumors and leukemia.

Researchers in Taiwan noted in 2001 that the levels of chemicals that were considered to be a cause of lung cancer were 40 times higher in a poorly ventilated Taiwan temple where burning incense was practiced compared to homes where people smoked tobacco [2]. However in the absence of a large sample size the researchers could not state categorically what the potential cancer risk would be in temples where burning of incense was practiced. The researchers did however establish that the levels of pollutants were higher in the temple in the study compared to what would normally be encountered at a city road junction with high volumes of traffic [2].

In 2004 researchers from the University of Maastricht undertook experiments to determine what the levels of fine particulates in the air were following burning of church candles for nine hours in a small chapel and, a simulated service using burning incense in a basilica [3]. They defined fine particulates as solid particles with a diameter of 10 microns or less because these can reach very deep into the lungs and cause health problems ranging from cancer to heart disease. The researchers found that the church, where candles had burned for nine hours, and their simulated service using burning incense in a basilica, contained fine particles that were 20 times the European Union limits for average indoor air [3]. They also found various types of free radicals in the air in the church and the basilica respectively, that trigger a range of inflammatory respiratory conditions, such as asthma and chronic bronchitis.

The findings of a very recent study of a large sample population definitely links burning incense to various respiratory cancers [4]. The study, published in October 2008, was conducted over more than 12 years and included more than 61000 ethnic Chinese living in Singapore. For the study 61320 Chinese men and women, who were cancer free at the commencement of the study, reported on their usage of burning incense. For example, they indicated how often they burned incense, duration of the burning and whether this was done only during the day or night or

continuously. Over the 12 year study period 325 men and women developed upper respiratory cancer, such as nasal, oral or throat cancer. In addition 821 participants developed lung cancer. The researchers noted that those participants who had made excessive use of burning incense had higher rates of squamous cell carcinoma and that this risk was noted in both smokers and non-smokers. Participants who used incense in their homes throughout the day or continuously over 24 hour periods were 80 percent more likely to develop squamous cell carcinoma of the entire respiratory tract compared to non-users. The link between incense usage and increased cancer risk was tested using other factors, such as smoking, diet, and drinking habits. The findings of the study were confirmed as being reliable thus may have significant ramifications in terms of public health especially as members of the public are sometimes involuntarily exposed to smoke from burning incense [4]. The researchers are of the opinion that future studies should be done to establish whether different types of incense may cause other types of cancer as their participants in Singapore used slow-burning long sticks or coils over an extended period [4].

Concluding remarks

Burning incense carries significant health risks and these should be brought to the attention of the public. There needs to be ongoing active public awareness campaigns. An environmental officer in Taiwan states that attempts are underway to educate the public about the harmful effects of burning incense [5]. For example, during Taiwan's green *Ghost Month* devotees burn incense sticks to honor their ancestors and wandering spirits. Apparently the Taiwanese officials hope to achieve a gradual phasing out of the use of burning incense given its cancer causing properties.

References

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