



International Agency for Research on Cancer
Centre International de Recherche sur le Cancer

PRESS RELEASE
N° 180

5 December 2007

IARC Monographs Programme finds cancer hazards associated with shiftwork, painting and firefighting

After a thorough review and discussion of the published scientific evidence, an [expert Working Group](#) convened by the IARC Monographs programme has concluded that

- Shiftwork that involves circadian disruption is [probably carcinogenic to humans \(Group 2A\)](#).
- Occupational exposure as a painter is [carcinogenic to humans \(Group 1\)](#).
- Occupational exposure as a firefighter is [possibly carcinogenic to humans \(Group 2B\)](#).

These three occupations involve complex exposure patterns that make it difficult to attribute risk to specific factors. [The Working Group, comprising 24 scientists from 10 countries](#), met at the [International Agency for Research on Cancer \(IARC\)](#), the cancer research agency of the [World Health Organization](#).

A summary of these conclusions is being published in the December issue of [The Lancet Oncology](#). Full results will be published next year as [volume 98 of the IARC Monographs](#).

Shiftwork that involves circadian disruption is “probably carcinogenic to humans”

Epidemiological studies have found that long-term nightworkers have a higher risk of breast cancer risk than women who do not work at night. These studies have involved mainly nurses and flight attendants. The studies are consistent with animal studies that demonstrate that constant light, dim light at night, or simulated chronic jet lag can substantially increase tumour development. Other experimental studies show that reducing melatonin levels at night increases the incidence or growth of tumours.

These results may be explained by the disruption of the circadian system that is caused by exposure to light at night. This can alter sleep-activity patterns, suppress melatonin production, and disregulate genes involved in tumour development. Among the many different patterns of shiftwork, those that include nightwork are most disruptive to the circadian system.

“Nearly 20% of the working population in Europe and North America is engaged in shiftwork, which is most prevalent in the health-care, industrial, transportation, communications, and hospitality sectors: To date, most studies have focussed on breast cancer in nurses and flight attendants. Now more studies are needed to examine this potential risk in other professions and for other cancers,” noted Dr Cogliano, Head of the IARC Monographs Programme.