



AIRCRAFT NOISE IN THE VICINITY OF AIRPORTS

The Issue

Jet aircraft are one of the most disturbing sources of noise in our environment. People who live in communities near airports have become increasingly concerned about potential health effects from aircraft noise.

Background

Scientists have raised concerns about the health effects of aircraft noise for two main reasons:

- There are studies that link excess noise exposure to increased stress levels
- Some studies suggest that chronic stress might lead to an increased risk of high blood pressure (hypertension) and heart disease for some people

Noise and Stress

The human stress response is a natural coping mechanism that occurs when we perceive something around us to be a threat. For people who are susceptible, the stress response triggers a sudden release of stress hormones. These hormones can cause temporary changes in heart rate and blood pressure.

For some people, a sudden or uncontrollable intense noise may be enough to cause a stress response. In most cases, the stress response is short-term, and the person's heart rate and blood pressure soon return to normal.

However, some scientists are concerned

that chronic stress, no matter what the cause, may lead to persistent increases in stress hormone levels and blood pressure. This may increase the long-term risk of heart disease. Health Canada's scientists are tracking these concerns, and have evaluated a number of studies about possible links between noise and stress-related health effects.

Aircraft Noise and Children

Studies conducted in both Los Angeles and Munich found that average blood pressure levels were slightly elevated in a group of school children exposed to aircraft noise. However, neither study provides conclusive proof that aircraft noise causes chronic stress in children.

One year later the researchers in Los Angeles did a follow-up study, and found no measurable difference in blood pressure levels between children exposed to aircraft noise, and those who were not. In the Munich study, it is unclear what may have caused the observed effects; other factors, such as diet, could have contributed to the changes in blood pressure.

The Munich study also looked at the levels of three different stress hormones in the children's blood. When the children were exposed to aircraft noise, the levels of two stress hormones went up, but the level of the third did not. This is significant because the stress hormone that did not increase is considered a better indicator of chronic stress than the other two.

The increases in blood pressure and stress hormone levels observed in these



studies also provide no evidence that noise exposure during childhood can lead to stress-related illness, including heart disease, later in life. The blood pressure increase in the children exposed to aircraft noise was small when compared to normal blood pressure variations among children.

Aircraft Noise and Adults

Scientific studies on adults have shown that short-term exposure to intense noise can cause temporary effects, including increases in heart rate and blood pressure. However, there is no consistent evidence that chronic noise leads to hypertension. In studies where such a link has been demonstrated, the effect may have been due to other factors that are known to be linked to high blood pressure, such as low economic status.

To date, there is insufficient evidence to conclude that aircraft noise causes heart disease. However, some studies suggest that people who live for many years in areas with intense traffic noise, may face a slight increase in the risk of developing heart disease. Health Canada will continue to assess future research on the potential health risks of aircraft noise.

Minimizing Your Risk

If you live near an airport, or are planning to move near one, a good first step is to get specific details about aircraft noise levels in the neighborhood. You can do this by contacting your local airport for a copy of the noise contour (noise map) for your area. From there,

you can compare your local noise contour to the contours recommended in either of the following documents:

- National Guidelines for Environmental Noise Control
- Land Use in the Vicinity of Airports (TP 1247E) Part IV

You may want to increase the sound insulation in your home if noise levels in your neighborhood exceed the recommended guidelines. The National Research Council of Canada has developed new software to help acoustical consultants determine sound insulation needs. These specialists can provide professional advice for a fee.

Health Canada's Role

Health Canada provides advice to the public and regulatory authorities, such as Transport Canada, on the health effects of aircraft noise. This ensures that health risks are taken into account when decisions are made that affect our exposure to aircraft noise.

In addition, Health Canada's scientists are continuing to assess the potential health effects of aircraft noise by:

- Conducting their own research on the stress response to aircraft noise
- Tracking and assessing scientific papers by other experts in this field
- Participating in the International Congress on Noise as a Public Health Problem, which takes place every five years

These efforts will ensure that Health Canada maintains a sound scientific basis for providing up-to-date advice regarding the health effects of aircraft noise on people who live near airports.

Need More Info?

For detailed scientific information about this issue, see: National Guidelines for Environmental Noise Control <http://www.hc-sc.gc.ca/hecs-sesc/ccrpb/soundnoise.htm>

Noise from Civilian Aircraft in the Vicinity of Airports – Implications for Human Health
I. Noise, Stress and Cardiovascular Disease
<http://www.hc-sc.gc.ca/hecs-sesc/ccrpb/publication/01hecs256/print.htm>

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Land Use in the Vicinity of Airports (TP 1247E) Part IV
This manual is posted on Transport Canada's web site at: <http://www.tc.gc.ca/CivilAviation/Aerodrome/Environment/TP1247E/menu.htm>

Additional It's Your Health articles can be found at: www.healthcanada.ca/iyh
You can also call (613) 957-2991

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