

# United States aviation transportation policies ignore the hazards of airport-related noise

Arline L. Bronzaft

Address for correspondence

Arline Bronzaft, PhD

505 E 79<sup>th</sup> Street, New York, NY 10021, USA

<[Albtor@aol.com](mailto:Albtor@aol.com)>

---

## Abstract

By relying on methods that underestimate the numbers of people affected by airport-related noises and dismissing the growing evidence that aviation noise is harmful to health, quality of life and children's development, United States aviation transportation policies largely ignore the impacts of airport-related noises on residents. Anti-aviation-noise community groups continue to demand the refunding of the Office of Noise Abatement and Control which once had the responsibility of protecting citizens from the dangers of noise.

## Keywords

aviation noise, noise pollution, transportation policy

## Aircraft Noise Annoys People

Noises are unwanted, uncontrollable and unpredictable sounds, whether loud or soft, that annoy and disturb people. Information on numbers of people annoyed by noise, particularly those of decibel levels below levels commonly associated with hearing loss, can be obtained through the use of community attitudinal surveys and by checking numbers of noise complaints registered with appropriate government agencies. Zaner (1991) identifies transportation vehicles as a major contributor of noise; over 40 million residents in the USA are disturbed by traffic noise with about 14 million complaining about aircraft noise. In addition, many people are bothered by noises generated by rail vehicles, water transports and snowmobiles.

However, airport owners claim that the past twenty years has seen the introduction of, and greater reliance on, quieter aircraft and for that reason believe that fewer people are now being disturbed by aircraft noise. On the other hand, the numbers may not have decreased, but rather increased, if we consider the rapid rise in air travel during this time and the greater use of smaller planes and private jets at smaller airports (Stenzel, 1996). Furthermore, estimating annoyance from complaints, as is often done in studies involving aircraft, underestimates the actual annoyance because too few people complain

(Borsky, 1980). A recent report sheds some light on how bothersome aircraft noise is to nearby residents (Bronzaft *et al.*, 1998). A questionnaire aimed at examining the health of two communities, one living within a flight pattern and the other in a non-flight area, found that nearly 70% of the residents living within the flight corridor reported themselves bothered by aircraft noise. Four questions had been inserted in this questionnaire that dealt with noise but the communities believed them to be part of the health survey.

Nearly all agencies and boards, standards setting bodies and international organisations, except the United States Department of Defense and the Federal Aviation Administration, use a Day-Night Level, DNL, criterion value of 55 dB(A) as the threshold for defining noise impacts in urban residential areas. The Federal Aviation Administration relies on the Schultz curve, which sets 65 dB(A) DNL as the contour level for significant annoyance. Dependence on a 65 dB(A) DNL underestimates the numbers of people annoyed by aircraft. Furthermore, researchers have criticised the way the Schultz curve was developed in the first place, stating that by its very design it underestimates annoyance.

Combining the information on aircraft noise annoyance provided by the Bronzaft *et al.* study with the likelihood that reliance on the Schultz curve has yielded underestimations of community annoyance, it is safe to conclude that far more people are bothered by aircraft noise in the United States than is generally reported. Furthermore, airports generate highway traffic and it is very likely that people are annoyed by traffic noises as well. In the borough of Queens in New York City there are two airports and many highways feeding these airports. It might be best to refer to airport-related noises to get a better estimate of the numbers of people annoyed and the degree to which they are annoyed.

## Noise is not just annoying but harmful to health

People are not just bothered or annoyed by noise – noise is hazardous to their physical and mental well-being. Government agencies have not only been lax in collecting data on the actual numbers of people

bothered by aircraft noise but they have also failed to recognise the injurious nature of aircraft noise intrusions. This failure has prevented the introduction of transportation policies in the USA that could adequately address the harm inflicted by aviation noise to the millions who live with these noises daily.

One reason for this failure may lie in the oft heard comment, from the industry and from government agencies, that there is insufficient research to support a noise/health link. Even though government and industry representatives acknowledge that noise may be annoying to some people, they mistakenly conclude that most people will learn to adapt to these intrusive noises. However, the literature on the adverse impact of noise to mental and physical health speak to the contrary – people can be harmed by noise and adaptation may come at a cost.

This was not the attitude of the federal government twenty five years ago. In its brochure entitled *Noise: A health problem*, the Office of Noise Abatement and Control, charged with protecting Americans against the dangers of noise, warned readers that noise could be dangerous to their health (US–EPA, 1978). The brochure linked noise to such disorders as hypertension, heart disease, ulcers and sleep disturbances. Even though at that time the existing studies linking noise to health needed to be corroborated by additional research, this federal agency believed that there was sufficient data to support warning American citizens. To quote:

‘Well-documented studies to clarify the role of noise as a public health hazard are still required, but we at least know from existing evidence that the danger is real... This booklet describes the ways that noise endangers our health and well-being.’ (U.S. EPA 1978, p 3)

Furthermore, Dr. William H. Stewart, former Surgeon General, in his keynote address to the 1969 Conference on Noise as a Public Health Hazard, made the following point:

‘Must we wait until we prove every link in the chain of causation?... To wait for it is to invite disaster or to prolong suffering unnecessarily.’ (US–EPA, 1978, p 23)

The then administrator of the Environmental Protection Agency speaking on the dangers of aviation noise before an Inter-Noise Conference in Washington in 1976 concluded:

‘It is time for us all to come together, and to come to grips with the problem of aviation noise, and to build, at long last, an air transportation system that is safe, healthy and quiet... We really know what needs to be done. We have simply lacked the will to do it. Let’s get the job done.’ (US–EPA, 1976, pp 17–18)

What changed the direction of the United States government? Why didn’t the airlines, the Federal Administration Agency, Congress and all interested parties get together to get the job done? Why didn’t they formulate policies that would protect home owners and communities. Before answering these questions, I will first discuss the research exploring the impacts of noise on health.

### Research linking noise & health

Reviews of studies examining the relationship between noise and health, including many looking at impacts from aircraft noise, can be found in: Tempest, 1985; Fay, 1991; Kryter, 1994; Bronzaft, 2002). The *Guidelines for Community Noise* issued by the World Health Organization (WHO) (Berglund, Lindvall & Schwela, 1999) sums up existing findings as follows: ‘... the growth in noise pollution is unsustainable because it involves direct, as well as cumulative, adverse health effects.’ Passchier-Vermeer and Passchier (2000) in their review of the literature concluded: ‘Exposure to noise constitutes a health risk.’ They also note that ‘... most public health impacts of noise were already identified in the 1960s and noise abatement is less of a scientific but primarily a policy problem.’

If we were to broaden the definition of health to ‘good health,’ not merely the absence of symptoms, as the World Health Organization has suggested (Berglund, Lindvall & Schwela, 1999), then there would be more evidence today to support the harmful effects of noise to health. When people complain that nearby noises interfere with their ability to carry out the normal activities of the household (e.g. conversing, watching television, reading, falling asleep) as they do so often at meetings around the country held by agencies such as the Federal Aviation Administration, then we know that noise brings about stress.

A decent quality of life includes carrying out normal activities without being intruded upon and stressed by nearby noises. In the study cited above (Bronzaft *et al.*, 1998) that asked residents living near an airport and a matched sample living further from the airport to complete a health questionnaire, those living within the flight path complained that aircraft noise interfered with their right to open their windows, listen to the radio and television, talk on the telephone, converse with others and sleep. When noises cause individuals to stop talking when planes fly overhead, or to miss dialogue on television shows, or prevent them from opening their windows on a nice Spring or Fall day, then their quality of life has been diminished. Hiramatsu (1999) found that Okinawa residents living near two air bases were similarly disturbed in their daily activities. Additionally,

Bronzaft *et al.* found that the residents living near the airport perceived themselves to be in poorer health, and in keeping with the WHO definition of 'good health,' noise was found to have an adverse effect on the health of these people.

### **Aviation noise harms children**

In September 2000, the Federal Interagency Committee on Aviation Noise (FICAN) concluded that:

'Research on the effects of aircraft noise on children's learning suggests that aircraft noise can interfere with learning in the following areas: reading, motivation, language and speech acquisition, and memory. The strongest findings to date are in the area of reading, where more than 20 studies have shown that children in noise impact zones are negatively affected by aircraft.'

A recent paper (Hygge *et al.*, 2002) further stresses the adverse effects of airport noise on children's cognitive performance. These authors found that children's reading and long-term memory worsened following exposure to noise from a new airport while the children who had been living near an airport that was then closed improved their reading and long-term memory skills.

I am called upon by community groups to respond to environmental impact statements in support of airport expansions and have been shocked to discover that the FICAN paper is not cited in documents discussing impacts of the expansions. FICAN is comprised of members from different government agencies, including a representative from the Federal Aviation Administration (FAA). One would assume that the FAA representative would share FICAN report – including those that discuss the effects of noise on children's development – with colleagues working on the documents dealing with airport expansions. Furthermore, the internet provides easy access to research in this area. Thus, there is no good reason for excluding research which examines the effects of noise on children. When environmental impact statements in support of airport development conclude, as many often do, that there are no studies linking airport noise to deficits in children's learning or their cognition, then I believe doubt should be cast on the validity of the entire document.

### **Why did the U.S. Government lose interest in noise abatement?**

In a paper entitled 'A voice to end the government's silence on noise' (1998) I raised some hypotheses as to why the government regressed after starting programs in the 1970s to curtail noise. This was especially true in the area of transportation noise. It had been suggested that Ronald Reagan, who came into the White House in 1980, was eager to transfer authority in a number of

areas to the states, and this included noise control. Thus, the funds to the Office of Noise Abatement and Control (ONAC) were sharply cut and just a skeletal office was left. Congress supported Reagan in this act and former Presidents George Bush and Bill Clinton showed no interest in revitalising ONAC. Today the office is essentially gone and we don't believe President George W. Bush will refund the office, nor is there much hope that Congress will provide the dollars. However, I hypothesised in the above-cited paper that the office was very likely stripped of funds because it was a threat to corporations and businesses who would have to speed up their efforts to lessen noise impacts. These corporations, who through their Washington lobbyists have much influence, prefer to do things at their own pace and don't want to direct their energies toward noise abatement. The air transportation industry is especially powerful in the United States.

For example, there was some effort to replace noisy aircraft with quieter ones but airlines circumvented regulations by introducing hush kits that they claimed would quiet the aircraft; in reality hush kits fell short of meeting desired noise levels. European countries were very critical of aircraft with hush kits and wanted to cease their operation in Europe but the United States prevailed on Europe to give them an extension as American companies don't like to retire their aircraft too early – it's not good for profits!

Airlines had been allowed, before September 11, 2001, to meet the need of customer demand without paying much heed to the noise effects on residents living near airports. In fact, the Federal Aviation Administration, the agency charged with air travel regulation, is extremely supportive of airlines, paying too little attention to community residents who are besieged by aviation noise. Airlines were given a free hand in the introduction of the hub and spoke system which in essence imposed more noise on certain communities because planes were going up, coming down, going up and coming down again at hub centres. Rather than considering rail connections for short flights, as some European countries have, the United States focused strictly on air travel and ignored the potential of short rail trips.

The close relationship between the government and the airline industry was evidenced by how quickly our Congressional representatives bailed out the airlines after the 9/11 disaster. Had the government been more observant, it would have recognised that the airlines were in financial difficulty before 9/11 and without the tragic events of that day these airlines would still be in trouble today.

### **Refunding the Office of Noise Abatement & Control**

There are many anti-aircraft-noise citizen groups in

the USA. They, through the aegis of the League for the Hard of Hearing in New York, urged several congress people to support legislation to reinvigorate ONAC. Such legislation has been introduced for several years now but has not gained sufficient support from members of Congress to succeed. These groups continue to pressure their legislators. ONAC lies dormant while noises, especially aviation noise, overwhelm great numbers of Americans. Two years ago as part of a major piece of Federal Aviation Administration legislation passed in 2000, a section was included that directed the General Accounting Office to study the adverse effects of aviation noise on people's health and on children's learning, to examine whether the measurements employed by the Federal Aviation Administration adequately assess the impacts of noise on residents, and to determine the effectiveness of noise abatement programs at our nation's airports. The General Accounting Office was to undertake this study but then decided the National Academy of Sciences was deemed better suited to carry out an investigation that included examining the physiological and psychological effects of noise. With no funds appropriated to the Academy to move forward on this study, it, like ONAC, lies dormant.

### Conclusion

Without the Office of Noise Abatement and Control or any office to protect the right to quiet that Americans were promised when the Noise Control Act was passed in 1972, residents who are subjected daily to overwhelming airport-related noises are not optimistic about these noises being abated in the near future. With little pressure from government agencies, especially the Federal Aviation Administration, the airline industry does not seem to be in a hurry to bring relief to these residents. It had been thought that 9/11 might lead to more rational transportation policies that would question the need for airport expansions, the need to increase airline slots at airports, and the need to continue air routes that could be replaced more efficiently by rail. Such policies would not only lessen the airport-related noises but should prove good for the environment and the American economy. However, evidence that reasonable transportation policies are evolving is lacking.

### References

Berglund, B., Lindvall, T. & Schwela, D.H. (1999) *Guidelines for Community Noise* World Health Organization, Geneva.  
 Borsky, P.N. (1980) 'Review of community response to noise' In Tobias, J., Jansen, G. & Ward, W.D. (Eds.) *Proceedings of the Third International Congress on*

*Noise as a Public Health Hazard (Freiburg)* ASHA Reports 10, American Speech-Language-Hearing Association, Rockville, MD.  
 Bronzaft, A. L., Ahern, K.D., McGinn, R., O'Connor, J. & Savino, B. (1998) 'Aircraft noise: A potential health hazard' *Environment and Behavior* 30, 101–113.  
 Bronzaft, A.L. (1998) 'A voice to end the government's silence on noise' *Hearing Rehabilitation Quarterly* 29, 6–12.  
 — (2002) 'Noise Pollution: A Hazard to Physical and Mental Health' in R.B. Bechtel & A. Churchman (Eds.) *Handbook of Environmental Psychology* John Wiley & Sons, New York.  
 Fay, T.H. (1991) *Noise and Health* New York Academy of Medicine, New York.  
 FICAN (2000) *FICAN position on research into effects of aircraft noise on classroom learning* Federal Interagency Committee on Aviation Noise, Washington, D.C.  
[http://www.fican.org/download/Effects\\_aircraft.pdf](http://www.fican.org/download/Effects_aircraft.pdf)  
 Hiramatsu, K. (1999) *A report on the aircraft noise as a public health problem in Okinawa* Department of Culture and Environmental Affairs, Okinawa Prefectural Government.  
 Hygge, S., Evans, G.W. & Bullinger, M. (2002) 'A prospective study of some effects of aircraft noise on cognitive performance in schoolchildren' *American Psychological Society* 13, 469–474.  
 Kryter, K.D. (1994) *The Handbook of Hearing and the Effects of Noise* Academic Press, San Diego.  
 Passchier-Vermeer, W. & Passchier, W.F. (2000) 'Noise exposure and public health' *Environmental Health Perspectives* 108, 123–131.  
 Stenzel, J. (1996) *Flying off course* Natural Resources Defense Council, New York.  
 Tempest, W. (Ed) (1985) *The Noise Handbook* Academic Press, London.  
 Upham, P. (2002) 'U.K. Regional Air Services Consultations: a summary of & commentary on the RASCO Reference Case' *World Transport Policy & Practice* Volume 8, Number 4, 39–46.  
<http://users.macunlimited.net/pascaldesmond>  
 US-EPA (1976) *Aviation Noise: Let's get on with the job* United States Environmental Protection Agency, Washington, D.C.  
 — (1978) *Noise: A health problem* Office of Noise Abatement & Control, United States Environmental Protection Agency, Washington, D.C.  
 Zaner, A. (1991) 'Definition and sources of noise' in T.H. Fay (Ed.) *Noise and Health* New York Academy of Medicine, New York.