

Senate Rural and Regional Affairs and Transport Legislation Committee

Questions on Notice

Inquiry into the Aviation Transport Security Amendment (Screening) Bill 2012

Question Number	Page No's.	Witness	Question asked by	Answered
1	-	ARPANSA	Senator Ludlam	25/05/12

**SENATE RURAL AND REGIONAL AFFAIRS AND TRANSPORT
LEGISLATION COMMITTEE**

Inquiry into the Aviation Transport Security (Screening) Bill 2012

**Question on Notice – Australian Radiation Protection and Nuclear Safety
Agency**

Written question (Senator Ludlam)

1. What is ARPANSA's view on research conducted by Boian S. Alexandrov (and colleagues) at the Center for Nonlinear Studies at Los Alamos National Laboratory in New Mexico which found that millimetre waves could "...unzip double-stranded DNA, creating bubbles in the double strand that could significantly interfere with processes such as gene expression and DNA replication."?

SENATE RURAL AND REGIONAL AFFAIRS AND TRANSPORT COMMITTEE
Aviation Transport Security (Screening) Bill 2012

ANSWERS TO QUESTIONS ON NOTICE

HEALTH AND AGEING PORTFOLIO

Question no: 1

OUTCOME 1: Population Health

Topic: ARPANSA's view on research on millimetre wave findings

Written Question on Notice:

Senator Ludlam asked: What is ARPANSA's view on research conducted by Boian S. Alexandrov (and colleagues) at the Center for Nonlinear Studies at Los Alamos National Laboratory in New Mexico which found that millimetre waves could "...unzip double-stranded DNA, creating bubbles in the double strand that could significantly interfere with processes such as gene expression and DNA replication."?

Answer:

The Australian Radiation and Nuclear Safety Agency (ARPANSA) has considered the 2010 paper by Alexandrov and colleagues referring to the possibility that terahertz (THz) frequency electromagnetic waves of sub-millimetre wavelength could produce genetic damage.

The Alexandrov et.al. publication describes a theoretical investigation of a mathematical model of possible interactions between terahertz (1 THz = 1,000,000,000,000 Hz) electromagnetic fields and DNA. Because details of the exact physical interaction between the radiation and the DNA are not known, the study makes various assumptions that affect its conclusions but which may not apply in living human tissue. The potentially damaging effects on DNA discussed in the paper occurred at simulated exposure levels well above current safety limits.

ARPANSA does not consider that the Alexandrov research should raise concerns about the safety of the currently proposed scanning technology which uses very low level exposures of short duration in a much lower frequency range. It may, however, highlight the importance of research in the higher THz frequency region if technologies using this range are being considered.