Media Release

NEW COAL POLLUTANT POSES RISK TO LUNG HEALTH
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(Sydney: Thursday, 23 November 2017): A new, potentially toxic, coal pollutant identified on city streets and water supplies could impact lung health, according to the Executive Director of the Forum of International Respiratory Societies (FIRS) Professor Dean Schraufnagel, who is in Australia to present to regional lung health experts at the Asian Pacific Society of Respiriology (APSR) Congress 2017, opening in Sydney today.

“Titanium suboxide nanoparticles are being released into the atmosphere. We need to very carefully investigate and assess the toxicity of this new pollutant in the human lung, and this could take years, a sobering thought considering its potential danger,” said Professor Schraufnagel.

Nanoparticles ofMagnéli phasesare a highly unusual form of titanium suboxide produced by burning coal. When the particles are introduced into the air -- unless captured by high-tech particle traps -- they can float away from power plant stacks and travel on air currents locally, regionally, and even globally.

When inhaled, the nanoparticles enter deep into the lungs, potentially all the way into the air sacs that move oxygen into our bloodstream during the normal breathing process. While human lung toxicity of these particles is not yet known, a preliminary biotoxicity test indicates that the particles could be toxic.

More troubling is that titanium suboxide nanoparticles are biologically active in the dark, making the particles highly suspect.

The discovery of titania suboxides, specifically Magnéli phases (Ti x O2x−1), as an incidental nanomaterial consequence of coal combustion was made by researchers at Virginia Tech College of Science and published inNaturethis year. The coal ash samples were taken from 12 coal-burning power plants utilizing various coals mined in a number of areas in the United States and China.

“The problem with these nanoparticles is that there is no easy or practical way to prevent their formation during coal burning,” said the study researchers. “In nations with strong environmental regulations, most of the nanoparticles would be caught by particle traps. Not so in Africa, China, or India, where regulations are lax or non-existent, with coal ash and smoke entering the open air.”

This new potential air pollution health hazard builds on already established findings from the World Health Organization. It estimates that 3.3 million premature deaths occur worldwide per year due to polluted air. In China, 1.6 million premature deaths are estimated annually due to cardiovascular and respiratory injury from air pollution. Most Chinese megacities top 100 severely hazy days each year with particle concentrations two to four times higher than WHO guidelines.

Direct health effects on humans is only one factor. Findings of thousands of scientists have determined that the biggest driver of warming of the planet and the resulting climate change is industrial-scale coal burning. The impact of titanium suboxide nanoparticles found in the atmosphere, in addition to greenhouse gases, on animals, water, and plants is not yet known.

“Further study is clearly needed, especially biotoxicity testing directly relevant to the human lung,” said Prof Schraufnagel. “But given the multiple of harms caused by coal burning, it is also essential that we do more to explore the use of cleaner fuels such as renewable sources, which may help combat air pollution and climate change.” END

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ABOUT APSAD SYDNEY 2017
The Asian Pacific Society of Respirology (APSR) Congress 2017 is being held at the International Convention Centre, Sydney from 23-26 November 2017. The APSR Congress will be hosted by the Thoracic Society of Australia and New Zealand in conjunction with APSR.

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