Submission
No 24

INQUIRY INTO NANOTECHNOLOGY IN NEW SOUTH WALES

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NSW Parliament Legislative Council

Standing Committee on State Development

Inquiry into Nanotechnology in NSW

Submission by Dr Michael Patane Date: 1st April 2008.

Context

As a member of the State of NSW, a founding director of a NSW based Biotechnology Company and a working scientist, I would like to make the following submission to the NSW Parliamentary Council in response to its Inquiry into Nanotechnology.

Our company, Protech Research Pty Ltd, is a private research organisation working in the area of food, cosmetic and pharmaceutical development.

Protech has received funding from both the State and Federal Governments which has led to the filing of 16 individual patent applications with a focus on producing structures while are sub micron or "nano" in size.

Over the last 9 years, we have developed both local and international partnerships with various universities within the nano field and have established a series of global joint ventures with companies to scale and licence our technologies which again can be viewed as "nanotechnology'' given the size of the products we are developing.

Each technology product that has been developed by Protech or is currently being scaled for commercial application is based on the use of food or pharmaceutically approved raw materials or processes with submissions for including these into the relative legislations currently being drafted.

Our companies primary areas of research relates to enzyme extraction and purification as well as the encapsulation of bioactives and nutrients.

Our current research into enzymes has lead to the development of a series of non-genetically modified enzymes which have been extracted, purified and concentrated from grain and legume sources, which compares favourably to most globally available products that are expressed primarily from Genetically Modified fungi or bacteria.

Our encapsulation technology have been shown to improve the stabilisation and delivery of compounds to targeted sites or cells, has been based on extensive overseas medical research dating back to the mid 1960s utilising an encapsulation vehicle called liposomes.

The use liposomes as carriers (which are typically produced to a size of 50 to 500nm) for the encapsulation of bioactive compounds, has found its primary focus within the pharmaceutical industry for the delivery of chemotherapeutic, leukemic and gene therapy drugs as well as within the cosmetic industry for the delivery of antioxidants. Our research has been to apply this established and proven science to the areas of food ingredients.

Key Points

While the areas of application for Nanotechnology are quite diverse and still in their commercial and research infancy, nano sized products have been engineered by plants and organisms throughout history.

In a research or commercials setting, any reproduction of these products and their suitable extensions should be accompanied by a detailed and fundamental assessment or understanding of product function, formulation, design and analysis criteria prior to application, consumption or use.

This would be important for human health and environmental considerations. It would increase public confidence in these products, thereby facilitating their appropriate uptake. Such confidence is critical to industry as well as the community and important facet of a functioning market place.

As indicated nanotechnology covers a diverse range of materials and products, there are already a range of regulatory bodies dealing with OH&S, laboratory standards, environmental impacts and food standards. In this context, it would seem that coordination and information are key facets of any recommendations that come out of this inquiry.

I would suggest that a visible and credible co-ordinating mechanism be established. Such a body would need to draw on independent experts from each of the fundamental and applied research areas (pharmaceutical, cosmetic, food and agricultural) consumer safety and community education bodies, environmental impact and awareness groups as well as industry representatives.

I would also suggest that information, regulation and standards need to be underpinned by a strong evidence base. This means research and research infrastructure, accessible by industry as well as university or institute based researchers. In this context, if there is not a clear understanding of the availability of relevant research infrastructure or capacity, I would recommend that an audit be undertaken.

Thank you for your consideration.

Michael Patane PhD FAIFST