



NDA–PHE Epidemiology Governance Group Annual Report FY2020/2021

The Epidemiology Governance Group of the Nuclear Decommissioning Authority (NDA) and Public Health England (PHE) exists to provide independent governance and oversight of epidemiology and radiobiology work undertaken in relation to the ex-BNFL and ex-UKAEA radiation worker cohorts.

The Governance Group membership includes representatives of the NDA and PHE, data custodians, representatives of both the management and workforces with responsibility (or legacy responsibility) for members of the study cohorts, and an independent chair. The trade union representatives are from GMB, Prospect and UNITE.

This annual report contains a summary of the FY2020/2021 year's activity in relation to work governed by the NDA–PHE Epidemiology Governance Group.

Further information on the epidemiology and radiobiology work can be found online at: www.gov.uk/government/collections/radiation-epidemiology

RESEARCH PROJECTS

Research projects are undertaken to improve the understanding of the effects of radiation and with the aim of protecting the health of workers and the wider population. The Governance Group assures that research activity and the reporting of research is consistent with good practice; the Governance Group does not directly commission or undertake research.

University of Bristol and Manchester Ischaemic Heart Disease (IHD) case-control study

A case control analysis involving an existing subset of Sellafield and Springfields workers and aiming to examine the association between radiation and IHD mortality, with adjustment for important lifestyle and occupational confounding factors is being undertaken by collaboration between the Universities of Bristol and Manchester, funded under DH PRP ¹. Dose data from the ex-BNFL database has been provided to the researchers for this study. The study has now been completed. A paper on the study was published in Radiation Research in August 2020 [1].

iPAUW: International Pooled Analysis of Uranium processing Workers

PHE is participating in an international pooled analysis of uranium workers led by the University of California, including cohorts from the USA, Canada, France, Germany, Russia and the UK. The study

¹ DH PRP – the Department of Health's Policy Research Programme for Radiation Protection Research



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aims to increase understanding of the risks associated with exposure to long-lived uranium radionuclides, the predominant exposures of uranium processing workers such as those at the ex-BNFL Springfields site in the UK. This project is currently under development, but the proposed timescale is 3-4 years. A favourable ethical opinion on the study has been received from an NHS Research Ethics Committee and support has been given by the NDA-PHE Epidemiology Governance Group. Data from the BNFL cohort concerning workers employed at the Springfields site will form the UK component of the study. PHE statisticians will be involved in the analysis of the pooled data and will also undertake a preliminary analysis of the Springfields cohort first to get a good understanding of what the UK component of the pooled study will bring to the analysis of the pooled data.

Molecular Epidemiology Pilot Study

A proof of concept molecular epidemiology study using the retained former Sellafield worker biological samples commenced in 2021. This pilot study aims to bring to together epidemiological and radiobiological techniques to explore a number of issues in radiation protection that are very difficult to address using either field in isolation. The BNFL worker samples provide a unique opportunity for this type of study. The worker samples will be assessed for a range of biomarkers known to be linked to radiation exposure and the results linked to cancer incidence and mortality data held in the BNFL epidemiological database and Occupational Health records, including data on various factors including smoking. If the study proves successful, it will pave the way for a larger programme of work to further develop the use of biomarkers to understand these issues in relation to the health effects of exposure to radiation, supporting radiation protection for current UK radiation workers. The project is anticipated to last 12 months.

ASSETS

Ex-BNFL and ex-UKAEA Databases

Databases holding the information required for the ex-BNFL and the ex-UKAEA epidemiology projects are managed by PHE. The operation of the ex-UKAEA database is undertaken by Nuvia Ltd; the ex-BNFL database is operated by PHE.

Digitisation of ex-UKAEA internal radiation doses

Funded by an EC-FP7 project (DoReMi), work was undertaken to digitise bioassay data previously only held on paper. All bioassay data from the UKAEA cohort has now been loaded into the SHIELD database. Software, making use of IMBA² techniques, has been developed to calculate organ doses from this data which can now be used in future epidemiology studies.

² IMBA – Integrated Modules for Bioassay Assessment (dose calculation software)



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Biological Samples

The biological samples (from blood) that had been collected, with consent, from radiation workers and their families as part of the pre-2010 WSC Genetics Group's radiobiology programme of work, continue to be stored at the Newcastle University Biomedicine Biobank (NBB). Following viability testing of the samples and a review of the associated databases, it has been concluded that the samples are suitable for further research.

FORWARD STRATEGY

Following a review of various options for managing the ongoing research epidemiology and radiobiology research programme and associated assets, the NDA published a Preferred Option paper in 2015. The NDA concluded that the preferred option was to 'further develop a strategic relationship with PHE with the long-term aim of restructuring the ownership and management of assets'. Before the restructuring can be considered, a new database management system is required to manage the ex-BNFL and ex-UKAEA databases together. Work to develop this commenced in November 2019 and it is anticipated this will be completed in 2023.

STAKEHOLDERS AND RELATED ENGAGEMENTS

The Governance Group met two times during the reporting year, on 6 November 2020 and 12 March 2021.

PHE researchers have engaged throughout the year with other radiation researchers within the UK and internationally primarily at scientific meetings or conferences. The aim is to promote awareness of the cohort among the radiation protection community and also to develop links that will foster opportunities for collaborative research that will be more informative than studying the cohort on its own.

Key fields of interest have been epidemiology, radiobiology and dosimetry.

ANNUAL REQUIREMENTS

Terms of Reference

The terms of reference for the Governance Group were reviewed at its meeting held on 12 March 2021.

Information Governance (IG) Training

All relevant staff have completed annual IG training.



Subject Access Requests

No subject access requests were received during the FY2020/2021 period.

Caldicott Audits

A Caldicott audit of the ex-UKAEA database work was conducted in March 2020 and reported a satisfactory outcome.

A Caldicott audit of the ex-BNFL database work was conducted in September 2020 and reported a satisfactory outcome.

PUBLICATIONS

The following paper can be accessed for free online by entering the doi number (digital object identifier) into a search engine:

[1] de Vocht et al. Ischemic Heart Disease Mortality and Occupational Radiation Exposure in a Nested Matched Case-Control Study of British Nuclear Fuel Cycle Workers: Investigation of Confounding by Lifestyle, Physiological Traits and Occupational Exposures. *Radiat Res.* 2020 Aug; 194(4):431-444. doi:10.1667/RADE-19-00007.1 [Open Access]