

NDA–PHE Epidemiology Governance Group Annual Report FY2014/2015

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 proposed or 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 FY2014/2015 year's activity in relation to work governed by the NDA–PHE Epidemiology Governance Group.

Research projects

A number of projects have been approved, progressed or completed during the year.

Analysis of Cancer Incidence and Mortality in Relation to External Exposure

This analysis, part of the Westlakes Scientific Consulting (WSC) approved programme when WSC closed in 2010, was completed and published in 2014. (Please see the publications section for the reference.)

JEM: Job Exposure Matrix for Early Sellafield Plutonium Workers

The JEM project is exploring the possibility of deriving estimates of doses for those early Sellafield plutonium workers whose limited monitoring data means that internal doses cannot currently be calculated with confidence. A job exposure matrix will provide intake, and hence dose, estimates based on information on individual exposure locations and times using data from 'exposure analogues' (individuals with similar exposure histories but who have better monitoring data). The project is being run under a DH PRP¹ programme and involves Sellafield, PHE and the universities of Bristol and Manchester. The first stages of data collation were undertaken during FY2014/2015. The project is due to be completed in 2016.

SOLO² SP3 Project – Pooled Plutonium Worker Analysis

A pooled analysis of plutonium workers from Sellafield and from the Mayak plant in the Southern Urals of Russia, was undertaken within the framework of the EC-FP7³ SOLO project. The SOLO project was a 5-year integrated, multi-disciplinary project to investigate the risks to health of low and protracted radiation exposures. The plutonium worker statistical analyses were jointly performed by PHE, the University of Manchester and the Southern Urals Biophysics Institute. The EC-FP7 SOLO project finished at the end of February 2015. Three scientific papers, assessing the risk of leukaemia, lung cancer and circulatory disease within the pooled cohort, are expected to be completed during the next year.

Case–control Analysis of Uranium and Plutonium Exposed Workers

This work, originally part of the EC-FP6⁴ Alpha-Risk project, is a case–control study involving a relatively small cohort of uranium and plutonium exposed workers. The project, involving workers from three countries (France, Belgium and the UK), is being led by CREAL⁵. Three papers are currently being prepared and are expected to be submitted for peer-reviewed publication during FY2015/2016.

Genetic Marker Papers

Three papers, assessing the cellular impact of exposure to ionising radiation through radiobiological examination of blood samples provided by consent, have been progressed during the year. This will complete pieces of work that had been undertaken at WSC before August 2010. One paper was completed during the reporting year (see the publications section) and the further papers, assessing chromosomal aberrations in workers exposed to plutonium or to external radiation, are progressing well. The work is being undertaken by University of Manchester staff, including researchers formerly employed in the WSC radiobiology and genetics team.

CURE⁶: Uranium Worker Study Feasibility Project

This project's aim was to examine the feasibility and, if appropriate, to develop a proposal and supporting documentation for a collaborative European uranium worker study. The project, undertaken within the EC-FP7 DoReMi⁷ programme, was completed on 31 December 2014. Reports detailing the feasibility outcome were delivered to the European Commission in January 2015.

Three papers are being prepared for submission to scientific journals or conferences. These will describe the multidisciplinary approach of the CURE project, development of the dosimetry protocol and work on uncertainty analysis.

MUSIC: MULTidisciplinary Study of Internal Contamination – BioMarkers

Following the CURE outcome, a proposed European collaborative study of uranium workers was submitted to the second call for proposals under the European Union supported OPERRA⁸ programme in March 2015 but was not accepted.

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

Within an EC-FP7 framework DoReMi project, work is being undertaken to digitise bioassay data previously only held on paper. Data collection for workers at the former UKAEA sites of Winfrith and Harwell is now complete and the Dounreay data collation continues and is scheduled to be completed by December 2015. The data will then be processed through IMBA⁹ software in order to calculate internal dose assessments which can be used in future epidemiology projects. Work has also been undertaken to test and ensure the software is ready for use with these cohorts.

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). Some consideration has been given to the future of the samples and this will be considered further, in conjunction with the Governance Group, during FY2015/2016. A 2013 audit of the stored samples provided a satisfactory report with some recommendations. A further audit is planned for FY2015/2016 and should confirm that the 2013 recommendations have been implemented.

Key developments

NDA Preferred Option Strategy

A preferred option strategy document was completed and published on the NDA website on 27 January 2015. The strategy endorsed Option 5: "To further develop a strategic relationship with Public Health England (PHE) (formerly the Health Protection Agency (HPA)) with the long-term aim of restructuring the ownership and management of the assets."

Stakeholders and related engagements

The Governance Group met three times during the reporting year, on 2 May 2014, 10 October 2014 and 13 March 2015.

Researchers and managers have also engaged with industry representatives through separate engagement or correspondence.

Project researchers have engaged throughout the year with other researchers within the UK and internationally. This has largely been through engagement in

collaborative projects such as SOLO, CURE, and DoReMi but additionally through involvement in MELODI¹⁰ and other opportunities such as scientific meetings or conferences. 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 and supported at its meeting held on 13 March 2015.

Information Governance (IG) Training

All relevant staff have completed annual IG training.

Subject Access Requests

No subject access requests were received during the FY2014/2015 period.

Caldicott Audits

A Caldicott audit of the ex-UKAEA database work was conducted on 17 June 2014 and reported a satisfactory outcome.

A Caldicott audit of the ex-BNFL database work was conducted on 12 March 2015 and reported a satisfactory outcome.

Publications

Gillies M, Haylock R. The cancer mortality and incidence experience of workers at British Nuclear Fuels plc, 1946–2005. *J Radiol Prot.* 2014 Sep;34(3):595–623. doi: 10.1088/0952-4746/34/3/595. Epub 2014 Jul 22.

Tawn EJ, Curwen GB, Rees GS, Jonas P. Germline minisatellite mutations in workers occupationally exposed to radiation at the Sellafield nuclear facility. *J Radiol Prot.* 2015 Mar;35(1):21–36. doi: 10.1088/0952-4746/35/1/21. Epub 2014 Dec 8.

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

² SOLO – Epidemiological Studies of Exposed Southern Urals Populations

³ EC-FP7 – European Commission's 7th Framework Programme for Research and Technological Development

⁴ EC-FP6 – European Commission's 6th Framework Programme for Research and Technological Development

⁵ CREAL – Centre for Research in Environmental Epidemiology in Barcelona

⁶ CURE – Concerted Uranium Research in Europe - Uranium Worker Study Feasibility Project

⁷ DoReMi – Low Dose Research towards Multidisciplinary Integration

⁸ OPERRA – Open Project for European Radiation Research Area

⁹ IMBA – Integrated Modules for Bioassay Assessment (dose calculation software)

¹⁰ MELODI – Multidisciplinary European Low Dose Initiative (an EU platform for low dose radiation risk research)