



Radiological Protection Institute of Ireland

An Institiúid Éireannach um Chosaint Raideolaíoch

Mr. Sean Morris
Nuclear Free Local Authorities Secretariat
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Town Hall
Manchester, M60 3NY
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Date: 19 February 2010

Dear Mr. Morris,

I refer to your correspondence of the 15th December 2009 regarding the briefing note prepared by marine consultant Tim Deere-Jones and presented to the NFLA meeting in Bray last October.

Firstly, I have to say that we were somewhat surprised that NFLA did not alert us in advance that our work was to be reviewed in this way at the October meeting and that this briefing note was placed on the NFLA website before giving us the opportunity to respond. The RPII has in the past always been happy to engage with your organisation and as recently as last March made a presentation to your meeting in Dundalk. Indeed at that meeting Mr Deere-Jones raised similar points, which at the time were refuted verbally by the RPII.

The briefing note appears to criticise both a report commissioned from the Centre for Environment, Fisheries and Aquaculture Science (CEFAS) by RPII and certain aspects of the RPII monitoring programme. I am happy to respond in full to the points raised concerning both of these matters.

The briefing note suggests that there are major gaps in the assessment made by the RPII of the impact of Sellafield discharges on the Irish Marine Environment. This is not the case. The RPII carries out comprehensive monitoring of radioactivity in the food chain and the environment in fulfilment of its statutory obligation to 'monitor activity or ionising radiation levels in anything in the State or in the waters surrounding the State'.

We have implemented a monitoring programme since the early 1980s. During this time, we have also undertaken research into the behaviour of artificial radioactivity in the environment, often in collaboration with Irish universities and international researchers. In the case of the marine environment, our monitoring involves measurement of radioactivity in fish, shellfish, as well as seaweed, sediment and seawater. Particular attention is given to monitoring the east coast of Ireland where discharges into the Irish Sea from the Sellafield nuclear fuel reprocessing plant have resulted in enhanced levels of artificial radioactivity.

The results of this programme are published both in RPII reports [www.rpii.ie] and in peer-reviewed scientific literature. It appears that the briefing note takes the RPII's 2007 monitoring report as representative of the RPII's entire programme over the last 20 years. To present the results of a single annual programme as being representative of this work is, we believe, completely misleading. Parameters such as actinide concentrations in western Irish Sea change slowly year on year [McMahon, C.A. *et al.*, 2005] and so it is not appropriate or indeed an efficient use of public money to needlessly measure all parameters every year. The briefing note selectively lists parameters not measured during 2007 and then attempts to imply that these have never been considered by the RPII which is simply not the case. As recently as last year, the RPII had its programme peer reviewed by a team of international experts to ensure that it is of

the highest international standards and in keeping with best practice. I would like to point out also that at no stage did Mr Deere-Jones contact us for further information about our monitoring programme.

The briefing note makes a great deal of the fact that the RPII contracted the Centre for Environment, Fisheries and Aquaculture Science (CEFAS) to undertake a habit survey in 2008. There are two relevant points here. Firstly, the contract was awarded after an EU-wide public tender process which was carried out in line with best public procurement practice. Secondly, CEFAS is an internationally recognised expert in carrying out habits surveys, with its work widely published in peer-reviewed scientific literature. The RPII stands over the way the contract was awarded and believes that the work was completed to an extremely high standard.

The briefing note mistakenly suggests that certain things are missing from the CEFAS report. CEFAS was contracted to undertake a particular programme of work to underpin specific aspects of the RPII's monitoring programme. The RPII commissioned this work in order to establish up-to-date data on how much fish people consume and other habits that would influence people's potential exposure to radiation of marine origin. The supposed "gaps" were in fact outside the scope of the contract. The scope of that work was outlined in our tender document which we would be happy to pass on should you require a copy.

It is suggested that RPII has not made any assessment of sea-to-land transfer. This is incorrect. In a study of Carlingford Lough carried out jointly with UCD and the Environmental Service of the Department of the Environment for Northern Ireland, an extensive investigation of this phenomenon was undertaken [Mitchell, P.I. *et al.*, 1992, Long *et al.* 1999]. This work looked at sites both in Carlingford Lough as well as more exposed sites along the Irish Sea coast and found no evidence for any enhancement in caesium or plutonium concentrations at more than 10 metres from the high water mark. The report concludes that sea-to-land transfer is negligible and has clearly no radiological significance. To suggest that the situation may have changed significantly because it is not routinely monitored is not reasonable.

It is also important to point out that the RPII monitoring is not confined to marine samples, but includes a wide range of environmental samples including air and terrestrial foodstuffs. Therefore, to infer that there is some major gap in our assessment of the radiation dose to the Irish people is not credible.

In addition, it is claimed that the RPII does not sample fine grain sediments. This again is simply not the case. Every year, the RPII samples fine grain sediments from the western Irish Sea 'mud patch' and has built up an extensive data set from this area. In addition, we have taken sediment samples both from Carlingford Lough, which includes areas of fine mud and sediment, and from more exposed sites along the Irish Sea coast. These data are shown in the RPII monitoring reports over the past 20 years or more.

In relation to Am-241 the briefing note is correct in saying that the Am-241 inventory in the Irish Sea is made up of Am-241 discharged directly from Sellafield as well as Am-241 produced as a result of the decay of Pu-241. It is also correct to say that Pu-241 was discharged in considerably greater amounts than was Am-241. However, the conclusions drawn from these facts in relation to the impact on the Irish environment and the radiation dose to Irish people are not consistent with the scientific evidence. As no references are specified in the briefing note it is difficult to comment in detail on the figures given. However, it is useful to point out the following in relation to Am-241.

- In general, radionuclide levels in the Irish Sea are falling as a result of the reductions in discharges from Sellafield. Because Am-241 binds strongly to sediments and because of the in-growth from Pu-241, Am-241 levels in biota and surface sediments in the Irish Sea will, in general, fall much more slowly than levels of other radionuclides. Model predictions from UCD [Mitchell *et al.*, 1999] forecast that concentrations of Am-241 are

likely to remain relatively static for many decades to come. This means that the percentage of the total dose attributable to Am-241 is likely to increase, but, this is due to doses from other nuclides decreasing and is not because Am-241 concentrations are likely to significantly increase. The total impact of Sellafield discharges on the Irish population, taking all radionuclides into account, is likely to continue to decrease and slowly level out. To suggest otherwise is inconsistent with the data collected by RPII, UCD and other material published in the scientific literature.

- The briefing note states that Am-241 is 2.5 times as radio-toxic as plutonium. This is misleading since alpha-emitting plutonium isotopes are marginally more radiotoxic than Am-241. It is specifically Pu-241 which is less radiotoxic than Am-241.
- While it is correct to say that RPII does not routinely measure Am-241 in sediments, the RPII has undertaken research to assess Am-241 concentrations in the Irish marine environment [Ryan, et al. 1999, Mc Mahon et al. 2005]. It is clear from the data that Am-241 concentrations in sediments change very slowly and, as stated already, routine annual measurement is not warranted. It should be noted that RPII in conjunction with the Northern Ireland Environment Agency (NIEA) is planning to revisit the Carlingford Lough study to assess changes over the last decade.

In conclusion, we believe that the briefing note is selective in the facts it presents and misleading in the conclusions it draws. RPII monitoring data shows that the radiation dose to the most exposed Irish individual, as a result of Sellafield, is very small in comparison to the dose received from natural sources and is miniscule in comparison with the dose received from all sources of radiation. Any suggestion that there are major gaps in the RPII's monitoring programme, which undermine this conclusion, is in our view incorrect.

Again, we would like to thank you for outlining your concerns to us and hope that this letter has allayed those concerns. We should also appreciate if you will distribute our response to your member authorities as promised in your letter and publish it on your website.

Yours sincerely



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cc Environment Radiation Policy, Department of the Environment Heritage and Local Government

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