The University of Manchester

**Coupland 2 Building Survey Information**

5th August 2008

Dear David and Trevor,

Please find enclosed all the reports for the surveys carried out within the Coupland 2 Building, both by the Radiation Safety Unit (formerly the Radiation Protection Service) and NIRAS.

As I recall all levels of the building were monitored (each room on each floor since the building had been fully vacated) and contamination was only detected in the basement level.

This contamination was remediated by NIRAS and the RSU.

Please see the reports, should you wish any further information, please contact me.

Best Regards,

Kevin Robinson
Radiation Safety Unit

6th June 2001

**University of Manchester**
**Coupland 2 Building**
**Monitoring**
**Prior to refurbishment**

The Radiological Protection Service was requested to monitor several rooms within the Coupland 2 Building prior to refurbishment being carried out.

Although there is no documentary evidence of any work involving the use of radioisotopes having been carried out during this buildings history – it was deemed that monitoring should be carried out as a precautionary measure.

The rooms as specified by the Estates Department were monitored using Berthold instruments type LB1210B and LB1210D.

All rooms monitored had previously been cleared of staff and furniture and therefore good access to the floors was possible. The flooring in parquet in nature on a concrete base structure. The floors in some rooms were covered with either vinyl or carpet. The corridors linking the rooms were also monitored.

The survey involved the monitoring of the total floor area in all rooms and walls up to laboratory bench height, where walls were original to the building. It was not deemed necessary to monitor partition walls as these were fitted within the recent time compared to the age of the building.

The results of the monitoring did not reveal any levels of contamination.

**It is important that these rooms are accurately identified on working drawings, since most rooms are not labelled with door numbers.**

It was not possible at this survey to gain access to the following rooms:

Room A25 on the staircase, rooms A23 and A24 on the first floor and room Mezz 1 on the staircase.

Kevin J. Robinson

Cc Mr. J. Duffy – Estates Department

**University of Manchester**
**Coupland 2 Building**
**Monitoring**
**Prior to refurbishment**

**11th June 2001**

The Radiological Protection Service was requested to monitor several rooms within the Coupland 2 Building prior to refurbishment being carried out.

Although there is no documentary evidence of any work involving the use of radioisotopes having been carried out during this buildings history – it was deemed that monitoring should be carried out as a precautionary measure.

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The survey involved the monitoring of the total floor area in all rooms and walls up to laboratory bench height, where walls were original to the building. It was not deemed necessary to monitor partition walls as these were fitted within the recent time compared to the age of the building.

It was not possible at this survey to gain access to the following rooms:
B3, G1, G3, G4, G5, A2, A6, A10

The basement plant room was not surveyed due to the unsafe nature of this area.

The small square tiling to the ladies and gents toilets on the first-floor stairwell, were found to have an increased count rate above background (20 cps maximum). This count rate is detectable across the entire floor areas and it is **not** likely to be due to radioactive contamination. The nature of the tiles or surface glaze is the most likely cause for the increased count rate. The larger tiles (6" x 6") did not have any raised count rate. Please see the conclusions at the end of this report

Radioactive contamination **was** detected in the following rooms:
B6, B9, B10.

Warning "Radioactive Material" tape was fixed across the doorways of each room and the areas of contamination were marked on the floor. Please see the conclusions at the end of this report

**Conclusions**

Should it be required to remove the small square tiles from these toilet areas, it would be advisable to contact the RPS, so that a small sample can be taken for further analysis to determine the quantity and nature of the radioactivity and for advice on removal and disposal of this type of material.

Samples of the parquet flooring from the contaminated rooms will be taken by the RPS for further analysis to determine the nature and quantity of the contaminant.

**It is important that, all rooms that have been monitored by the Radiological Protection Service are accurately identified on working drawings, since most rooms are not labelled with door numbers.**

Kevin J. Robinson

Cc Mr. J. Duffy – Estates Department

**University of Manchester**
**Coupland 2 Building**

**Basement Room**
**(Situated in the left hand corner near the plant room)**

15th October 2001

Monitoring of the above room following the removal of the wooden block flooring revealed an area of contamination due to radium-226 / lead-210 at a level of 1.5 $Bq.cm^{-2}$ (Becquerels per square centimetre).

Using a Mini Instrument, Geiger monitor type EL, the area was determined to be no greater than one hundred square centimetres. This area would have covered no more than four of the wooden floor blocks as could be seen by the outline in the bitumen where the wood blocks had originally been fixed.

Since all the wooden blocks have been removed and exist as one large mass, it was determined for disposal purposes that this mass could be disposed of as "Schedule 1 Substance" within the "Radioactive Substances Act 1993".

The following calculation has been used to determine compliance with the above criteria.

| | | |
|---|---|---|
| Activity per centimetre square | = 1.5 | $Bq.cm^{-2}$ |
| Contaminated area | = 100 | square centimetres |
| Weight of wooden blocks | = 200 | grams per block |
| Quantity of blocks | = 4 | |

Calculation

$$\frac{1.5 \times 100}{200 \times 4} = 0.1875 \text{ Bequerels per gram}$$

It is the recommendation by RPS that these blocks are bagged and disposed as normal builders refuse. It should be ensured that adequate protective clothing and dust protection is used at all times.

The floor of this room will have remedial work carried out as discussed with Peter Thomson of the Estates Department on the above date.

Kevin J. Robinson

**Notes on a project meeting Re Coupland 2 building University of Manchester 15th October 2001**

Present: Steve Bidey, Peter Thomson, Liz Kelly, Kevin Robinson, Stephanie Adams, Barry Frith.

A brief analysis of the implications of the results of investigative work undertaken by NIRAS was given by B.F. The main implication was that it was not possible to confirm that waste generated during the remediation of the contaminated areas by removal of the floor covering and bituminous layer would be exempt under the Radioactive Substances (Phosphatic Substances and Rare Earths etc.) Exemption Order.
There was some strong evidence of contamination of the concrete beneath the bituminous layer.
It was accepted that an Authorised route for disposal would be required, and that this would take time to arrange, with implications for the project schedule.
It was concluded that the reinstatement of the Universities alpha via Dust Bin authorisation should be sought in discussions with the E.A. as the best practicable option.

It was also decided that waste generated during the University/Haverns removal of floor covering in Room *** should be disposed of as exempt waste under the Radioactive Substances (Phosphatic Substances and Rare Earths etc.) Exemption Order provided that calculation of activity concentration of the material removed show that the material is compliant. A record of the calculations and disposal would be kept.

Actions to be take to progress the work

NIRAS would undertake radon in air measurements in the rooms under investigation a.s.a.p. which will be taken as a worst case for radon in air for the remediated area, i.e. the area when returned to general use.

Hayverns would be instructed to undertake the removal of floor covering and bitumen in areas of identified contamination. This work would be under radiological supervision, and subject to a Prior Risk Assessment and written Operating Procedures, as directed by their Radiation Protection Adviser. Removed material will be stored pending disposal arrangements. Any radioactivity associated with the concrete beneath the bitumen will be immobilised using a water based epoxy paint or similar, and covered with aluminium sheeting fixed by adhesive to prevent access to the internal radiation hazard. Areas will be monitored to confirm the absence of any occupationally significant hazard of the rooms in an undisturbed state.

Other contractors will work in the area without disturbing the remediated areas. And will, should disturbance of the building fabric be required, liase with the University RPS so that monitoring can be undertaken to confirm the absence of radiological hazard.

Barry Frith

**Peter Thomson**
**Estates Department**
**University of Manchester**

7th November 2001

Dear Peter,

We have now carried out a final survey of the Basement Room in the Coupland 2 Building (situated in the left hand corner near the plant room).

No further contamination was detected, other than the area already identified This contamination does not appear to be due to lead-210 as previously indicated, but is due to a low energy beta emitter, which can easily be filtered using a thin sheet of aluminium.

Therefore it is proposed that this contamination is left in situ as with the other rooms and covered over with a steel plate, whilst refurbishment is carried out.

It transpires that NIRAS **have not** quoted for any work to be carried out in this room, but they have indicated that they will cover the area with a steel plate as part of their remit, as they are already on site.

As you are aware the floor in this room has been stripped back to the bitumen layer and therefore I would suggest that the entire floor is covered with a layer of concrete as proposed for the other rooms.

Should you wish to discuss this further, please do not hesitate to contact me.

Yours sincerely,

Kevin J. Robinson

[redacted]

## *OFFICE OF THE DIRECTOR OF ESTATES*

## *MEMORANDUM*

THE UNIVERSITY
of MANCHESTER

To: Steve Bidley - RPS

c.c. File

From: Peter Thomson

Date: 19 November 2001

Tel: 0161-275-2264

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**Re:- RADIOLOGICAL CONTAMINATION BASEMENT OF BRAGG BUILDING**

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Please find attached a copy of the Clearance Report from NIRAS following the removal of the radiological contamination to the Basement of Bragg Building.

Copies of the report have been sent to the main contractor undertaking the refurbishment works at Coupland II and the original report is with John Duffy.

Regards

Peter