DANISH HEALTH AUTHORITY
Radiation Protection

Updated May 15th 2024

# English translation of the instruction on how to interpret the dose result list (accredited version) sent out by the Personal dosimetry laboratory of the Radiation Protection division at the Danish Health Authority.

The Danish headings are printed with blue. Translation of headings are written in italics.

| **Measurement type:** Heading that indicates which type of monitoring the results are for, e.g. '3mdr - Helkrop – Dosisovervågning' *'3 months - Whole body - Dose monitoring'* | | | Result id. | Customer number |
|---|---|---|---|---|
| **Navn, fødselsdag og profession – eller lokale**<br>***Name, birthday and profession - or room*** | **Måleperiode**<br>***Measurement period*** | **Resultat**<br>***Result*** | **Anvendt dosimeter og evt. Bemærkninger**<br>***Dosimeter used and any remarks*** | |
| List of personal and extra dosimeters that have been used for monitoring, with the specified measurement type for which a measurement result is now available. For personal dosimeters, the name, date of birth (day-month) and the profession associated with the dose-monitored (selected from a list when establishing dose monitoring) are provided. | Dose monitoring period<br><br>Monitoring start date<br>-<br>Monitoring end date | The result of the dose assessment in the period indicating the type and magnitude of the measured dose, (e.g. 'Huddosis: 0,8 mSv' *'Skin dose 0.8 mSv'*). | The unique number of the used dosimeter and in parentheses its serial number. Any indication of the dosimeter's location. Date of receipt and dosimeter readout. Any changes in the dosimeter's condition from when it was sent out to when it is received. | |

The result list contains results for dose monitoring of your company/department and is divided according to the different types of monitoring (measurement types) for which there is a result. Each table contains results for one measurement type. Within each table, the dose measured for the specified period (measurement period) is given for each person. Operational quantities are measured, as recommended by ICRP and ICRU.
Results for personal-borne dosimeters are reported to the Danish Health Authority's Register for Personal Dosimetry (bek. 669/2019 § 87), where the operational quantities are set equal to effective and equivalent dose, cf. bek. 669/2019 annex 4.

Each result can consist of an assessment of the following:

**Helkropsdosis** ***Whole body dose:*** Is a measure of the risk of damage, the radiation would have with a homogeneous irradiation of the whole body (effective dose). The dose is determined as the personal dose equivalent $H_p(10)$.

**Huddosis** ***Skin dose*****:** Is a measure of the impact the radiation has on the skin (equivalent dose). The dose is determined as the personal dose equivalent $H_p(0,07)$.

**Ekstremitetsdosis** ***Extremity dose*****:** Is a measure of the impact the radiation has on the relevant extremities, in this connection the fingers (equivalent dose). The dose is determined as the personal dose equivalent $H_p(0,07)$.

**Method:**
The reported doses are determined with dosimeters from SIS personal dosimetry laboratory's, which are read on one of two own TL-readers: Thermo Fisher Scientific, Harshaw TLD™ Model 8800 Plus (serial numbers 1108167/1108168). Information about specific reader is not reported, but is recorded in our register. Doses are traceable to calibration in the standard dosimetry laboratory at SIS. All doses are given in mSv (millisievert) and are deducted a contribution of 1.73 µSv/day from the average natural background radiation in Denmark. The dose is reported with one decimal. If the dose cannot be determined, 'Ikke målt' (*'Not measured'*) is indicated. Results are reported for all dosimeters that are returned.

**Uncertainty:**
The uncertainty of doses measured with whole body dosimeter (whole body and skin dose) is approx. 25 % (95 % confidence) at doses above 1 mSv and increases with smaller doses, so the uncertainty at reported dose of 0.1 mSv is about 50 % (95 % confidence).

The uncertainty of doses measured with finger dosimeter (extremity dose) is approx. 30 % (95 % confidence) at doses above 5 mSv and increases with smaller doses, so the uncertainty at reported dose of 1 mSv is about 50 % (95% confidence).

The measurement uncertainties are in accordance with the standard for accuracy for individual dose monitoring by external irradiation (ISO 14146:2018).

**Accreditation:**
The personal dosimetry laboratory, SIS PL, is accredited by DANAK under reg. no. 503 in accordance with the DS/EN ISO/IEC 17025 standard for assessment of

- $H_p(10)$ and $H_p(0,07)$ using whole body personal dosimeter. The method is validated according to the standard DS/EN 62387:2022.
- $H_p(0,07)$ using finger dosimeter. The method is validated according to the standard DS/EN 15382:2015.

**Additional:**
If the dosimeter's condition upon return differs from its condition upon dispatch, this will be indicated in the section 'Bemærkninger' *'Remarks'*, for example if it is damaged. Other irregularities, which are found in connection with the determination of the final result, will also be indicated in the field. Such irregularities can lead to greater uncertainty on dose assessment.