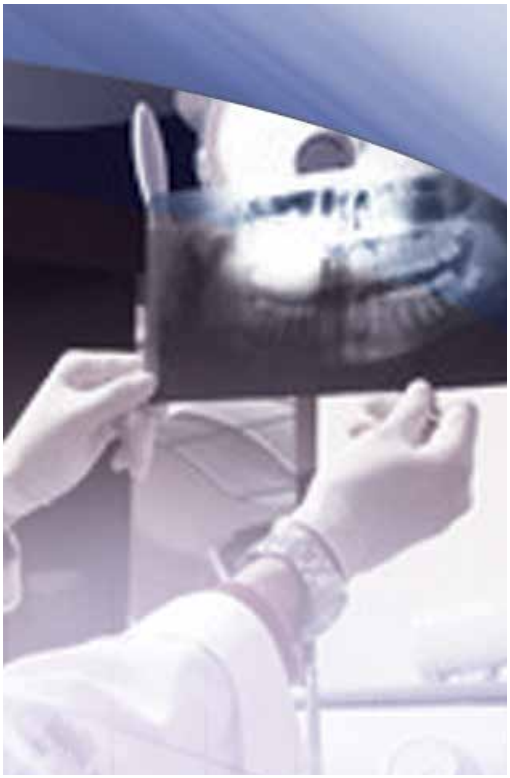
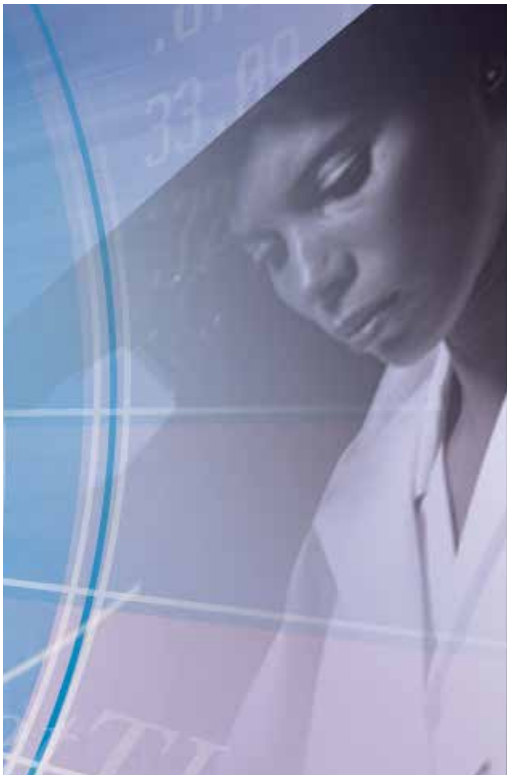
Health Canada Santé Canada

Your health and safety… our priority. *Votre santé et votre sécurité… notre priorité.*

NATIONAL DOSIMETRY SERVICES

SERVICE GUIDE





Canada

Health Canada is the federal department responsible for helping the people of Canada maintain and improve their health. We assess the safety of drugs and many consumer products, help improve the safety of food, and provide information to Canadians to help them make healthy decisions. We provide health services to First Nations people and to Inuit communities. We work with the provinces to ensure our health care system serves the needs of Canadians.

Également disponible en français sous le titre :
Services nationaux de dosimétrie
Guide des services

To obtain additional information, please contact:

Health Canada
Address Locator 0900C2
Ottawa, ON K1A 0K9
Tel.: 613-957-2991
Toll free: 1-866-225-0709
Fax: 613-941-5366
TTY: 1-800-465-7735
Email: publications@hc-sc.gc.ca

This publication can be made available in alternative formats upon request.

Publication date: February 2014

Cat.: H129-36/2-2014E-PDF
ISBN: 978-1-100-23194-5
Pub.: 130570

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1. NDS AT A GLANCE

1.1. Who We Are

The National Dosimetry Services (NDS) is a division of Health Canada that provides personal radiation monitoring products and services to over 90,000 workers across the country. Since 1951, NDS has helped organizations in various industries improve their occupational health and safety programs by providing timely and accurate radiation exposure information.

1.2. Why Use a Dosimeter?

Dosimeters can help your organization minimize and manage radiation exposure risks by:

- **Indicating possible equipment problems and safety gaps.**
  Radiation exposure data can indicate problems with equipment, operational procedures and employee workload.
- **Providing dose management information.**
  The Exposure Reports we provide can help you ensure that your radiation exposure levels are within the safety limits set by your regulator.
- **Providing lifetime dose information.**
  Individuals registered with our monitoring program have access to a personalized dose record which indicates their cumulative radiation exposure over their career.
- **Monitoring pregnant workers.**
  There are greater exposure risks during pregnancy when fetal cells are developing and multiplying. Dosimeters can be used as a dose management tool to monitor a pregnant worker's exposure to radiation.
- **Providing peace of mind.**
  Employees will feel reassured knowing that they have the proper tools to monitor and minimize their radiation exposure.

1.3. Contact Us

You can reach our bilingual Client Services Unit Monday to Friday from 7 a.m.–5 p.m., Eastern Standard Time. Please ensure that you provide your group number when contacting us.

Telephone:	1-800-261-6689
Fax:	1-800-252-6272
Email:	nds-snd@hc-sc.gc.ca
Website:	www.healthcanada.gc.ca/nds
Mail:	National Dosimetry Services Radiation Protection Bureau 775 Brookfield Road Address Locator 6301D Ottawa, ON K1A 1C1

1.4. Product-line

We offer a wide range of products that monitor exposure to X-ray, gamma, beta and neutron radiation.

All of our products meet the strict technical and quality assurance standards set forth by the Canadian Nuclear Safety Commission (CNSC) as well as the federal, provincial and territorial regulators.

Our product-line consists of the following active and passive dosimeter products:

- Thermoluminescent Dosimeters (TLD)
- Ring Dosimeters
- InLight Optically Stimulated Luminescent (OSL) Dosimeters
- Neutron Dosimeters
- Electronic Personal Dosimeters

For information on our services, please see section **3.6 Additional Services**.

2. HOW THE SERVICE WORKS

2.1. Components of Your Dosimetry Service

There are a number of key components to your dosimetry service that you should familiarise yourself with, including:

Dosimeters

Your dosimeters are the devices that will monitor your exposure to radiation. They will be sent to you on regularly scheduled intervals throughout the year.

Dosimeters are worn on specific areas of the body called wearing locations. You can find your wearing location by reviewing the "Type/Location" section on the Name List that accompanies your dosimeter shipment.

Name List

A Name List is a document that will accompany each dosimeter shipment that you receive. The Name List is similar to a packing slip and contains important information, including:

- Your group number (used to identify your account when contacting us)
- The number of dosimeters included in the shipment
- Individuals' names and dosimeter assignments (i.e. who is assigned to which dosimeter)
- The wearing period start and end dates
- The wearing location of each dosimeter
- Special instructions
- Order form
- Glossary for making administrative changes

The Name List can also be used to communicate account changes. Please refer to the section **3.1 How to Make Changes to Your Account** for more information.

Please retain a copy of your Name List for your records; additional and/or replacement copies are available for a fee and charged under the "Customized Reports" rate as per the Products, Services and Fee Schedule.

Prepaid Return Label

A prepaid return label is included in each dosimeter shipment. Use the label to return your old dosimeters to us for processing. If you choose to return your dosimeters to us using a method other than the one we provide (courier service, etc.), you may do so at your own expense. Please refer to section **3.2 Returning Your Dosimeter Shipments** for more information.

Exposure Report

The Exposure Report is a document that contains the exposure results for your dosimeters. You will be mailed an Exposure Report each time you return a dosimeter shipment to us for processing. Please refer to section **3.3 Understanding Your Exposure Report** for more information.

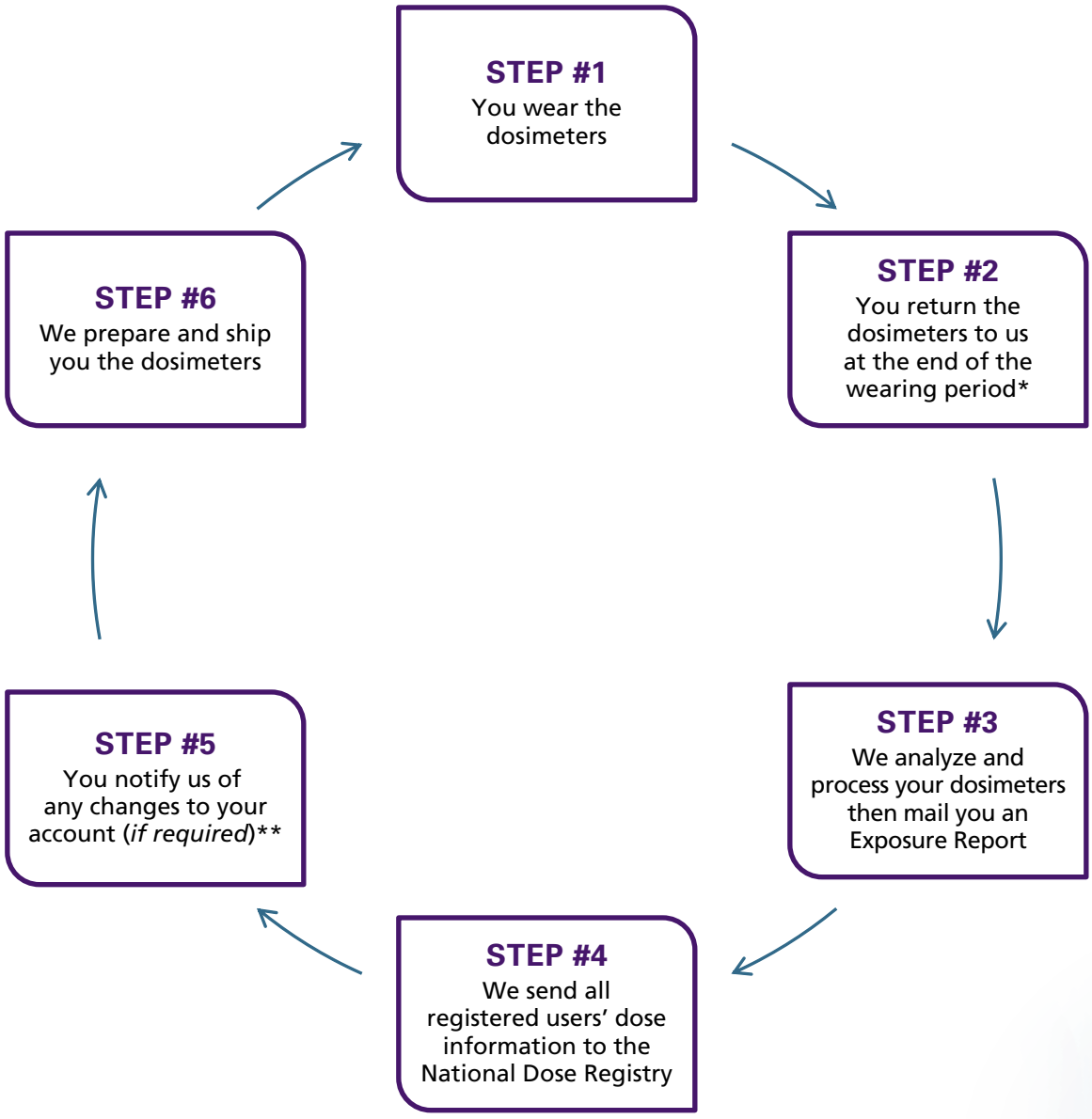
Please retain a copy of your Exposure Report for your records; additional and/or replacement copies are available for a fee and charged under the "Customized Reports" rate as per the Products, Services and Fee Schedule.

Account Activity Report

The Account Activity Report (AAR) is your invoice. AARs will be mailed to you according to your wearing period frequency. Please refer to section **4.2 Understanding Your Account Activity Report (invoice)** for more information.

2.2. Service Overview

Your service runs on a continual cycle where your dosimeters are worn for a specified period of time (called a "wearing period") and then returned to us for processing and subsequent issuance of an Exposure Report containing your dose results.



* *You will receive your replacement set of dosimeters prior to returning your old dosimeters to us for processing.*

** *See section* **3.1 How to Make Changes to Your Account** *for timelines on when to submit changes.*

2.3. Wearing Period Schedule

Your dosimeters will be worn for specific periods of time (called wearing periods) and then returned to us for processing. Exchange dates will commence on either the 1st or 15th of the month.

We will send replacement dosimeters a few days prior to your next scheduled change over date. Once you have your replacement dosimeters, exchange the ones you are currently wearing with the new ones as close as possible to the start of the new wearing period. Promptly return the old dosimeters (**used and unused**) for processing in order for us to produce your Exposure Report. If you do not receive your replacement dosimeters by the start of your new wearing period, continue to wear your current dosimeters and contact us.

Wearing Schedule Table

To determine your wearing schedule frequency and timelines, please refer to the service letter used in your group number (e.g. group number **B**12345) located on your Name List. Use this letter to identify your appropriate wearing schedule frequency and timelines when viewing the following tables.

SEMI-MONTHLY Wearing Schedule (24 shipments per year)

SERVICE LETTER	PERIOD	START DATE	END DATE
A, P	1	January 1st	January 14th
	2	January 15th	January 31st
	3	February 1st	February 14th
	4	February 15th	February 28th
	5	March 1st	March 14th
	6	March 15th	March 31st
	7	April 1st	April 14th
	8	April 15th	April 30th
	9	May 1st	May 14th
	10	May 15th	May 31st
	11	June 1st	June 14th
	12	June 15th	June 30th
	13	July 1st	July 14th
	14	July 15th	July 31st
	15	August 1st	August 14th
	16	August 15th	August 31st
	17	September 1st	September 14th
	18	September 15th	September 30th
	19	October 1st	October 14th
	20	October 15th	October 31st
	21	November 1st	November 14th
	22	November 15th	November 30th
	23	December 1st	December 14th
	24	December 15th	December 31st

MONTHLY Wearing Schedule (12 shipments per year)

SERVICE LETTER	PERIOD	START DATE	END DATE
H, L	1	January 1st	January 31st
	3	February 1st	February 28th
	5	March 1st	March 31st
	7	April 1st	April 30th
	9	May 1st	May 31st
	11	June 1st	June 30th
	13	July 1st	July 31st
	15	August 1st	August 31st
	17	September 1st	September 30th
	19	October 1st	October 31st
	21	November 1st	November 30th
	23	December 1st	December 31st

QUARTERLY Wearing Schedule (4 shipments per year)

SERVICE LETTER	PERIOD	START DATE	END DATE
B, J, M, T, U	1	January 1st	March 31st
	7	April 1st	June 30th
	13	July 1st	September 30th
	19	October 1st	December 31st
C, R	3	February 1st	April 31st
	9	May 1st	July 31st
	15	August 1st	October 31st
	21	November 1st	January 31st
D, S	5	March 1st	May 31st
	11	June 1st	August 31st
	17	September 1st	November 30th
	23	December 1st	February 28th
E, K	2	January 15th	April 14th
	8	April 15th	July 14th
	14	July 15th	October 14th
	20	October 15th	January 14th
F	4	February 15th	May 14th
	10	May 15th	Augu[st] 14th
	16	August 15th	November 14th
	22	November 15th	February 14th
G	6	March 15th	June 14th
	12	June 15th	September 14th
	18	September 15th	December 14th
	24	December 15th	March 14th

2.4. Dose Records

After your dosimeters are returned and processed, we send you an Exposure Report containing your dose results. We then send the dose information for registered users to the National Dose Registry (NDR), which is a centralized radiation dose record system, operated by the Radiation Protection Bureau of Health Canada. The NDR contains the occupational dose records of all registered radiation workers in Canada from the 1940's to the present.

If you would like to obtain a personalised dose history, please contact the NDR directly at:
www.healthcanada.gc.ca/ndr

2.5. Privacy

As part of the federal government, we adhere to the *Privacy Act* and ensure that personal information collected from you is secure, confidential and protected against misuse or wrongful disclosure. Information collected by us may only be sent to the National Dose Registry for the purpose of maintaining registered users' dose information.

If you would like more information about the *Privacy Act*, please visit The Office of the Privacy Commissioner of Canada at www.priv.gc.ca. If you have any questions or concerns regarding the protection of your personal information, please contact us.

2.6. Regulatory Environment

In Canada, workplace health and safety acts and regulations protect workers against the hazards of ionizing radiation. These programs are administered and / or enforced by Federal, Provincial or Territorial regulatory authorities.

The responsibilities of regulators include:

1. Determining whether the use of dosimeters for occupational dose monitoring of radiation workers at their work location is mandatory or voluntary.
2. Determining the frequency of wearing periods for dosimeter users.
3. Establishing the radiation dose limits for radiation workers as well as for the general public.
4. Reviewing and regulating the radiation protection program (including the dosimetry program) for organisations to ensure regulatory compliance.

Provincial and Territorial Jurisdiction

Workplace health and safety programs are regulated by the provinces and territories when the radiation source is a radiation emitting device such as X-rays. Examples of provincially regulated environments include: dental, veterinary and medical practices.

Federal Jurisdiction

The Canadian Nuclear Safety Commission (CNSC) regulates nuclear sector facilities in Canada, such as nuclear power plants, uranium mines and mills. They also regulate specific activities including dosimetry services, packaging and transportation of nuclear substances.

The CNSC regulates organisations when the radiation environment is created due to the use of radionuclides and nuclear material.

Radiation Dose Limits

The quantity measured by external dosimeters used for occupational monitoring is called "Equivalent Dose". The equivalent dose limits, established by federal, provincial and territorial organizations identify the highest dose values permitted to the various parts of the body ("Effective Dose" refers to whole body doses). For example, the dose limit tables from the CNSC are as follows:

PERSON	PERIOD	EFFECTIVE DOSE (mSv)
Nuclear energy worker, including a pregnant nuclear energy worker	One-year dosimetry period Five-year dosimetry period	50 100
Pregnant nuclear energy worker	Balance of pregnancy	4
Person who is not a nuclear energy worker	One calendar year	1

ORGAN OR TISSUE	PERSON	PERIOD	EQUIVALENT DOSE (mSv)
Lens of an eye	(a) Nuclear energy worker (b) Any other person	One-year dosimetry period One calendar year	150 15
Skin	(a) Nuclear energy worker (b) Any other person	One-year dosimetry period One calendar year	500 50
Hands and feet	(a) Nuclear energy worker (b) Any other person	One-year dosimetry period One calendar year	500 50

Radiation dose limits are determined by federal, provincial and territorial regulators and may vary from one province or territory to another. Please contact your regulatory authority for more information.

Contact Information for Regulators

The contact information for the federal, provincial or territorial regulators can be found at the following website: www.hc-sc.gc.ca/ewh-semt/radiation/fpt-radprotect/guide-ld-eng.php#appendixc.

3. MANAGING YOUR DOSIMETRY ACCOUNT

3.1. How to Make Changes to Your Account

You can make changes to your dosimeter account in a number of ways, including:

1. **Telephone:** 1-800-261-6689 (7 a.m.–5 p.m. Eastern Standard Time)
2. **Fax:** 1-800-252-6272
3. **Email:** nds-snd@hc-sc.gc.ca
4. **Directly:** Using the Name List

When Should You Communicate Administrative Changes to Us?

We begin preparing dosimeter shipments three to four weeks prior to the start of your wearing period, so please make sure to notify us of any changes to your account in advance.

To ensure that your administrative changes are reflected in your next scheduled shipment, please follow these timelines:

- **Quarterly Service Groups:** Ensure that all required changes are received by us *30 days* prior to the start of the next wearing period.
- **Monthly or Semi-monthly Service Groups:** Ensure that all required changes are received by us *20 days prior* to the start of the next wearing period.

To find your applicable wearing schedule dates, please see section **2.3 Wearing Period Schedule**.

Using Your Name List as a Communication Tool

The Name List is a document that accompanies each dosimeter shipment and can be used to communicate administrative account changes directly to us.

The most common types of changes can be communicated by using one of the checkboxes ☑ found to the right of the dosimeter serial number on the Name List.

These changes include:

RI	**Remove Individual***	Individual no longer requires a dosimeter.
DNU	**Dosimeter Not Used**	Dosimeter was never used.
DL	**Dosimeter Lost**	Dosimeter was lost.
LCN	**Legal Name Change**	Individual has a legal name change.
DR	**Dosimeter Re-assigned****	Dosimeter re-assigned to another individual.

* *Removing an individual does not automatically decrease the number of dosimeters sent to you. Please complete the "Order Form" accordingly.*

** *A dosimeter can only be re-assigned if it has not been used.*

Sample Name List

Health Canada / Santé Canada — *Your health and safety... our priority. Votre santé et votre sécurité... notre priorité.*

NAME LIST ☢ **LISTE DE NOMS**

Printed on: YYYY/MM/DD (-123456) — HC Protected (when completed)

Attention: — **Page 1 of 1**

Group Number: (T) 12345

XYZ DENTAL CLINIC
ATTN: DR. SMITH
123 MAIN STREET
YOUR CITY ON K1A 1C1

FOR NDS USE ONLY	
DPDU	CSU

For ***Registration of New Users, Special Instructions*** and ***How to Complete the Order Form***, please refer to the reverse side of this Name List. → → → → → →

Wearing Period: **01**	START USE ON **2014-01-01**	END USE ON **2014-03-31**	**Dosimeters Issued: 9**

Contact NDS if replacement dosimeters do not arrive by the end date of the wearing period listed on this Name List.

Please check the appropriate box according to the changes required to your Name List. See the Glossary below for definition of acronyms.

GLOSSARY	**RI*** (Remove Individual)	**DNU** (Dosimeter Not Used)	**DL** (Dosimeter Lost)	**LNC** (Legal Name Change)	**DR** (Dosimeter Reassigned)

RI* When removing an individual (RI), this does not automatically decrease your dosimeter requirements, please complete the Order Form below for dosimeter adjustments.

ID If a letter appears in the ID column beside an individual's name, it indicates that at least one other person (active or inactive) within your group has the same name. Please include this identification letter when communicating information regarding these individuals.

ORDER FORM

See the reverse side of this Name List for associated costs prior to completing Sections A-B.

Dosimeters and/or Holders required prior to next regular scheduled shipment.

A	Please send me the number of dosimeters indicated immediately upon receipt of this request. (***Additional cost will apply $$***)	
B	Please send me the number of holders (plastic casing) indicated immediately upon receipt of this request. (***Additional cost will apply $$***)	

Dosimeters and/or Holders required for the next regular scheduled shipment.

C	Please send me the total number of dosimeters indicated for the next shipment.	
D	Please send me the number of additional holders (plastic casing) indicated with the next shipment.	

Full Name	***ID***	**Type/ Location**	**Dosimeter Serial #**	**RI***	**DNU**	**DL**	**LNC**	**DR**	**Comments**
ABSON, MARY JANE		Whole Body/ Torso	123456	☐	☐	☐	☐	☐	
COLE, ANDREW JAMES		Whole Body/ Torso	234561	☐	☐	☐	☐	☐	
FROST, MICHAEL GEORGE		Whole Body/ Torso	345612	☐	☐	☐	☐	☐	
HARRISON, RICHARD	A	Whole Body/ Torso	456123	☐	☐	☐	☐	☐	
HARRISON, RICHARD	B	Whole Body/ Torso	561234	☐	☐	☐	☐	☐	
O'BRIEN, SHANNON		Whole Body/ Torso	612345	☐	☐	☐	☐	☐	
RICHARDS, ANNE MARIE		Whole Body/ Torso	654721	☐	☐	☐	☐	☐	
		Whole Body/ Torso	125634	☐	☐	☐	☐	☐	
		Whole Body/ Torso	764152	☐	☐	☐	☐	☐	

Please provide the following contact information (Only if different from previous submission):

Name List Completed by: _____ Telephone: _____ Extension: _____
E-mail Address: _____ Fax: _____ Date: _____

Canada

Common Changes Using the Name List

A. Increasing the Number of Dosimeters for Your Next Shipment

STEP 1

Complete the "Order Form" section of the Name List indicating the **total** number of dosimeters required with your next shipment in section "C"

STEP 2

Fill out section "D" if additional holders are required (applicable for TLD and Uranium Mines only).

B. Decreasing the Number of Dosimeters for Your Next Shipment

STEP 1

Complete the "Order Form" section of the Name List indicating the **total** number of dosimeters required with your next shipment in section "C".

STEP 2

Check ☑ "RI" (remove individual) if the individual assigned to the dosimeter no longer requires one with the next shipment

C. Registering a New User

STEP 1

Complete the "New User's Registration Form" found on the back of the Name List.

STEP 2

Ensure that **all** mandatory information for the new user is provided.*

STEP 3

Follow the steps for "A" (Increasing the Number of Dosimeters for your Next Shipment) if you require more dosimeters/holders as a result of the new user being added.

* *Without all of the mandatory information, the new user will not be added to your account and any dosimeter(s) that you may have assigned to the individual will be reported as "individual" and dose information will not be maintained within the National Dose Registry (NDR).*

D. Re-assigning a Dosimeter to Another Individual

STEP 1

Ensure the dosimeter being re-assigned has not previously been worn by another individual.

STEP 2

Check ☑ "RI" (remove individual) if the individual originally assigned to the dosimeter no longer requires one with the next shipment.

STEP 3

Check the box "DR" (Dosimeter re-assigned).

STEP 4

Print the individual's full name in the "Comments" section and complete the "New Users' Registration Form" on the back of the Name List.

E. Assigning a Spare Dosimeter to an Individual

STEP 1

Print the person's full name in the section titled "Full Name" adjacent to the serial number of the dosimeter that was issues as a spare.

STEP 2

Complete the "New User's Registration Form" on the back of the Name List.

STEP 3

Check ☑ "RI" (remove individual) if the individual does not require a dosimeter with the next shipment.

F. Getting Additional Dosimeters Immediately (ad-hoc request)

STEP 1

Complete the "Order Form" section of the Name List indicating the number of dosimeters and/or holders (plastic casing) required **immediately** in sections "A" and "B".

STEP 2

Clearly indicate who the dosimeter is for (e.g. an individual or spare) and if applicable, complete the "New Users' Registration Form" on the back of the Name List.

STEP 3

Fax the completed Name List to 1-800-252-6272 or call us at 1-800-261-6689 to place your ad-hoc request for additional dosimeters.

Note: *Dosimeters requested outside of the regularly scheduled shipment are subject to an ad-hoc dosimeter fee, plus a handling charge for each subsequent, non-scheduled shipment as per the Products, Services and Fee Schedule.*

G. Communicating Other Administrative Changes

Other account changes requiring action should be recorded on the Name List ("Comments" section) and/or included on a separate piece of paper. Examples include:

- Address change
- Correct a spelling error
- Notification of a damaged, contaminated or lost dosimeter
- Any other information you like us to be made aware of

3.2. Returning Your Dosimeter Shipments

We make every effort to ensure that returning your shipment is easy and convenient. With each new dosimeter shipment you receive, there will be:

1. A prepaid return label (see image below) to be used to return old dosimeters to us for processing. You will also find some "Handle with Care" stickers that should be placed on the box/envelope.
2. A Name List which identifies new dosimeter assignments.
3. Your replacement dosimeters, with serial numbers corresponding to the Name List document.
4. Any additional items you ordered such as extra holders, an opening tool, etc.

If you are missing ANY of the above in your dosimeter shipment or if your replacements have not yet arrived by your new start date, please call us at 1-800-261-6689.

Prepaid Return Label

Please follow the steps below to mail your package back to us:

STEP 1

Remove the new dosimeters, the accompanying Name List and prepaid return label from the package.

STEP 2

Confirm that the information contained on both the new Name List and the corresponding dosimeters are the same. **Contact us if there are any discrepancies.**

STEP 3

Exchange the dosimeters presently being worn with their replacements as close as possible to the start of the new wearing period. Record all administrative changes on the Name List to be returned and make a photocopy for your records.

STEP 4

Place all of the old dosimeters (used and unused) in the reusable box along with the **corresponding Name List** (e.g. dosimeter numbers match those on the Name List) and any other related documentation needing to be returned.*

STEP 5

Close the box or envelop and seal (use stick strip provided for envelop packaging). Affix the prepaid return label and the "handle with care" sticker. If a white sleeve protector is being used, affix the prepaid return label and the "handle with care" sticker to the white sleeve and seal.

STEP 6

Retain the tracking number label for your records in case you need to track the package through Canada Post. Please visit www.canadapost.ca to track your package.

STEP 7

Mail the package by dropping in any Canada Post mail box or Post Office.

STEP 8

If you choose to return your shipment using a method other than the one provided (courier service, etc.), you may do so at your own expense.

* ***Non-preloaded groups:*** *Return dosimeter cards only. Unload dosimeter from the holder as these will be used for your replacement shipment.* ***InLight and Neutron groups:*** *remove and retain the clips prior to returning. Secure dosimeters into the foam tray provided prior to sealing the box or envelope.*

3.3. Understanding Your Exposure Report

Every time you return dosimeters to us they are read, analysed and validated. Based on this process an Exposure Report is generated and then mailed to you.

Exposure Reports contain personal data regarding the radiation exposure levels received by each individual and/or dosimeter (e.g. Area monitor, visitor) during a specific wearing period.

Sample Exposure Report

Health Canada | Santé Canada — Your health and safety... our priority. | Votre santé et votre sécurité... notre priorité.

NDS/SND **EXPOSURE REPORT** **RAPPORT D'EXPOSITION**

XYZ DENTAL CLINIC
ATTN: DR. SMITH
123 MAIN STREET
YOUR CITY ON K1A1C1

Retain this Copy for your Records

(Replacement copies are available upon request for an additional fee.)

Group Number: T 12345 **Date of Report:** 2014-01-10 **Page 1 of 1**

Description: TLD Service, Quarterly, X-Ray/Gamma/Beta

Period Start – End (1)	Dosimeter Serial # (2)	Full Name (3)	Multi-Group (4)	Type / Location (5)		Current Dose (6)	Cumulative Dose (mSv) Year (7)	Cumulative Dose (mSv) Life (8)	Anomaly (9)
2013-10-01 2013-12-31	124567	ABSON, MARY JANE		Whole Body / Torso	Body	-	-	-	
					Skin	-	-	-	
2013-10-01 2013-12-31	185689	FROST, MICHAEL GEORGE		Whole Body / Torso	Body	-	-	-	B
					Skin	-	-	-	
2013-10-01 2013-12-31	145868	HARRISON, RICHARD		Whole Body / Torso	Body	-	-	-	
					Skin	-	-	-	
2013-10-01 2013-12-31	678545	O'BRIEN, SHANNON		Whole Body / Torso	Body	0.12	0.12	0.28	
					Skin	0.12	0.12	0.28	
2013-10-01 2013-12-31	374524	RICHARDS, ANNE MARIE		Whole Body / Torso	Body	-	-	-	
					Skin	-	-	-	
2013-10-01 2013-12-31	125634	VISTOR		Whole Body / Torso	Body	-	-	-	
					Skin	-	-	-	
2013-10-01 2013-12-31	486589	NOT USED		Whole Body / Torso	Body	-	-	-	
					Skin	-	-	-	
Dosimeters not received by NDS									
2013-07-01 2013-09-30	123789	HARRISON, RICHARD		Whole Body / Torso	Body				
					Skin				
Dosimeters declared lost by customer									
2013-10-01 2013-12-31	234561	COLE, ANDREW JAMES		Whole Body / Torso	Body				
					Skin				

Anomalies received for this report

** Anomaly B
Dosimeters annotated with anomaly B, indicates exposure to light. This is likely due to the dosimeters having been exposed to light during storage or handling at your offices. While we can detect exposure to light, we can only roughly approximate the effect on the dosimeter reading. As a result, incorrect dose estimates may be reported. Please ensure that the cards are protected from exposure to light during storage and changeover at your group.

Canada

How to Read Your Exposure Report

The following headings are found on your Exposure Report:

Period: Start—End	The wearing period start and end date in which the dosimeter was issued.
Dosimeter Serial #	The dosimeter serial number.
Full Name	Name of the individual who wore the dosimeter.
Multi-group	If "yes" indicates that the individual is active in more than one group. Cumulative totals are all inclusive. Blank indicates individual is active in one group only.
Type/Location	The wearing location of the dosimeter.
Current Dose (mSv)	The dose received for the wearing period indicated.
Cumulative Dose (mSv) Year	Cumulative dose(s) for the individual in the current year. This is not group specific; individual may have received a reported dose from another group and/or dosimetry service provider.
Cumulative Dose (mSv) Life	Cumulative dose(s) for the individual's lifetime. Includes dosimeters used by the individual under a different group number and/or another dosimetry provider.
Anomaly	An unusual situation encountered while processing a dosimeter.

NOTES:

- If an individual appears more than once on the Exposure Report, this may signify that more than one dosimeter belonging to this individual was returned for processing. Look for differences within the "Start and End Dates" column and the type/location column.
- Cumulative dose totals are wearing location specific and will be sent to the National Dose Registry (NDR) using the type/location as indicated on the Name List.
- Descriptions of the indicated anomalies will be displayed at the end of your Exposure Report when applicable.
- Exposure Reports are generated and mailed to you as soon as possible, however, if you do not receive your Exposure Report one month after sending back your dosimeters, please let us know.
- Please retain the Exposure Report for your records. Additional and/or replacement copies are available for a fee.

Using Your Exposure Report to Identify Outstanding Dosimeters

On your Exposure Report, you will find the heading "**Dosimeters not received by NDS**", also referred to as "outstanding dosimeters". Dosimeters listed below this heading have not been received by NDS at the time the Exposure Report was generated. These dosimeters should be returned as soon as possible, not only to receive the dose results but to avoid any applicable late fees.

Dosimeters will be continually listed under the "**Dosimeters not received by NDS**" heading until they are either returned or declared as "lost". Once a dosimeter is declared "lost", it will appear under the "**Dosimeters declared lost by customer**" heading one time only.

Important Notice for Uranium Mine Groups

Groups belonging to the Uranium Mines service that have declared an assigned dosimeter as "Lost", must take note that the dose received (if applicable) does not get registered to the individual's lifetime history with the National Dose Registry (NDR). In order to have this dose or an estimated dose added to the individual lifetime history for that particular wearing period, groups must contact their regulatory authority for approval to have the dose registered with the NDR.

3.4. Control and Area Dosimeters

Control Dosimeter

Your personal dosimeters are intended to measure occupational radiation exposure, which is defined as radiation exposure from sources you work with. However, dosimeters are also affected by radiation exposure from other sources, including:

- radiation encountered while the dosimeters are in transit or in storage
- natural background radiation (i.e. terrestrial and cosmic radiation)

A control dosimeter is used to measure these non-occupational radiation doses. When your dosimeters are processed, the control dosimeter's reading is subtracted from the reading of each of the other dosimeters in your group, leaving the occupational radiation exposure each person received. This process is called "background subtraction".

A control dosimeter is assigned for each wearing period, and must be included when returning your shipment to us at the end of the wearing period, along with the other dosimeters for processing. A control dosimeter should never be assigned to an individual and used as a personal dosimeter. Control dosimeters should be stored in the same location and in a manner identical to that for all other dosimeters, well away from the source of radiation.

A control dosimeter is automatically provided for certain clients. Please see section 5 "Your Dosimeter" to determine if a control dosimeter will be included in your shipment. If you are not receiving a control dosimeter and would like one, please contact us.

Area Dosimeter

A personal dosimeter is usually worn by a specific person to measure his or her radiation dose. However, a dosimeter can also be used to characterize the radiation hazard associated with a specific location. A dosimeter used in this way is called an area dosimeter.

The reading from an area dosimeter can be interpreted as the radiation dose that a person would receive if they stayed in that dosimeter's location for the full duration of the wearing period. An area dosimeter reading can be converted into a dose rate (for example, in mSv/hour) and used to estimate the dose a person received from spending a known amount of time in that area.

An area dosimeter can be a useful component of a well-designed radiation protection program, but is not an adequate replacement for electronic survey equipment, or for assigned personal dosimeters.

We issue area dosimeters only upon request. If you would like to receive one or more area dosimeters with your regular dosimeter shipment, please contact us.

3.5. Dose Change Requests

All occupational dose records for registered dosimeter wearers are submitted to the National Dose Registry (NDR). These dose records are monitored by the federal, provincial and territorial regulators for compliance with established dose limits.

Under certain circumstances, dose records may need to be changed, such as:

1. An investigation conducted by a client concludes that there is an incorrect dose record.
2. The dose recorded on a dosimeter has been determined to be non-occupational (e.g. due to a medical or accidental exposure).
3. An investigation conducted by the dosimetry provider (at the request of the client) concludes that an error has been made in a dose calculation.
4. An administrative error leads to an incorrect dose assignment.

The Dose Change Process

There are two processes used for making changes to dose records:

A. NDS Dose Change Process

B. Regulator Dose Change Process

Depending on the reason, you may require regulatory approval or not. Please review the criteria under sections "A" and "B" to determine what dose change process is applicable for you.

A. NDS DOSE CHANGE PROCESS

The NDS dose change process is appropriate when the dose change does not require regulatory approval.

Dose change requests that qualify as an NDS dose change process include:

- An investigation conducted by NDS (at the request of the client) concludes that a dose calculation error (e.g. inaccurate background dose determination, anomaly code(s) assignment, etc.) was made by NDS in determining the reported dose.

- An investigation conducted by NDS (at the request of the client) concludes that a clerical error was made by NDS for the reported dose. For example, a client informed NDS regarding a change in a dosimeter assignment (i.e. who wore the dosimeter); however NDS did not make the change before processing the dosimeter.
- For a reported dosimeter dose, a client identifies that a change in dosimeter assignment is required to match the actual dosimeter user. Such a dose request only qualifies for a NDS dose change process provided the reported dose on the concerned dosimeter is "NIL" (i.e. below the dosimeter reporting threshold).
- A correction pertaining to the mandatory personal information (e.g. Social Insurance Number, etc.) for the dosimeter wearer.

For any dose change request that qualifies as an NDS dose change process (as listed above), please contact us.

NOTES: A Dose Change Request Fee is applicable in certain situations, including:

- If a client initiates a dose change request and the subsequent investigation concludes that no error was made by NDS.
- If a client fails to provide the proper administrative information prior to a dosimeter being processed.

B. REGULATOR DOSE CHANGE PROCESS

A dose change request that does not meet any of the criteria for an NDS dose change process, requires regulatory approval. For more information, please contact your regulator.

- **Federal Regulator—Canadian Nuclear Safety Commission (CNSC)**
  www.nuclearsafety.gc.ca/eng
  Note: *Refer to Regulatory Standard S-260*
- **Provincial or Territorial Regulators**
  www.hc-sc.gc.ca/ewh-semt/radiation/fpt-radprotect/guide-ld-eng.php#appendixc

3.6. Additional Services

The following additional services can be provided by contacting our Client Services Unit. Please refer to the Products, Services and Fee Schedule for more information on associated costs.

A. PREGNANCY SERVICE

A monitoring service specifically designed to safeguard pregnant workers. The fetal dosimeter serves as an early detection monitor and is worn and then exchanged on a semi-monthly basis. We recommend that the pregnant worker wear both a fetal dosimeter in addition to a whole body dosimeter. The pregnancy service is to be established in addition to your regular dosimetry monitoring group.

B. ACCELERATED AND RAPID RESPONSE PROCESSING

In the event that you require a dosimeter(s) to be read immediately and would like to expedite the process, we provide two types of accelerated processing services:

1. **Rapid Response Processing (Emergency Reading)**
   If you require a dosimeter(s) to be processed immediately, we can provide you with a preliminary dose estimate (not an official Exposure Report) by the end of the next business day.
2. **Group Accelerated Processing**
   If you require an official Exposure Report immediately, we can provide you one within three business days.

NOTES:

- Please notify us immediately if you require a Rapid Response or Accelerated Processing and send the dosimeters to us using an expedited postal service, with an accompanying explanatory letter.
- Timelines mentioned above are effective upon receipt of the dosimeter.

C. CUSTOMISED REPORTS AND ANALYSIS

We have the capacity to provide customised reports and analysis according to your unique information requirements. Please contact us for more information.

D. DOSIMETRY TRAINING

One of our qualified dosimetry experts will visit your work location and explain how best to manage your dosimetry service, ensure best practices are in place and train your staff regarding the correct handling of dosimeters.

3.7. Best Practices for Handling Dosimeters

We recommend the following best practices when handling and wearing your dosimeters:

- Dosimeters must be handled with care and should not be damaged or exposed to radiation in any way that would not represent an actual occupational exposure.
- Do not photocopy dosimeter cards. Minimize dosimeters exposure to light during handling and/or storage as incorrect dose estimates may be reported.
- Handle dosimeters in a clean area. Any foreign material such as hand lotions, oils, adhesives, etc. that come in contact with the chips interferes with the dosimeter's readout and, as a result, hinders our ability to accurately estimate a dose.
- Avoid wetting the dosimeters or submerging them in liquids, including soap and water.
- Protect unused dosimeters by storing them with a control (if applicable) in a dark location and away from any radiation source.
- Do not place the dosimeter in a pouch or carrying case as this may affect the dosimeter reading.
- All dosimeters (used and unused) must be returned at the end of the applicable wearing period. Significantly longer durations result in reported doses being less accurate. This will also avoid overdue/late fees.

- A Control dosimeter is used to monitor levels of background radiation and for no other use.
- An assigned dosimeter is not to be worn at a non-work location, and is not to be removed from the worksite.
- A dosimeter must be worn by one individual only. Individual doses cannot be determined when shared.
- When travelling with your dosimeter (air travel), it is preferable for dosimeters to go through x-ray inspection in carry-on baggage rather than checked baggage. The doses associated with checked baggage can, on occasion be quite high, and can vary significantly through a package of dosimeters. The doses from carry-on baggage x-ray machines are not significant, being quite a bit lower than typical in-flight doses.

Non-preloaded Users:

- Keep unassigned dosimeter cards between the yellow cardboard protectors that are supplied, and wrap with an elastic band.
- Avoid touching the dosimeter chips when handling the cards. Do not photocopy, apply tape/labels or write on dosimeter cards. This can affect the reported dose and the individual's dose history.

4. FINANCIAL AND PAYMENT INFORMATION

4.1. Fees

All of our fees are regulated by the Treasury Board of Canada and can be found in the Products, Services and Fee Schedule (PSFS). All fees are charged at a cost-recovery rate.

There are a number of components to your dosimetry service that will be billed on a regular basis. These include the Annual Subscription, Handling and Processing fees. A description of each is provided in the table below:

FEE ITEM	FREQUENCY	DESCRIPTION
Annual Subscription	Once annually	The fee for your level of service (e.g. Bronze, Silver or Gold). Please see the PSFS for a description of each service level.
Handling Fee	Each shipment	The fee for the preparation and shipment of your package (includes a prepaid return label).
Processing Fee	Each dosimeter	The fee to read, analyse and validate each dosimeter.

Other fees are billed depending on additional services requested or if a dosimeter(s) is lost, late or damaged, including:

FEE ITEM	DESCRIPTION
Ad-hoc Fees	This fee applies when additional dosimeters are requested outside of the regularly scheduled shipment (i.e. during the middle of the wearing period).
Overdue/Late Fees	Dosimeters must be returned within an allotted time frame or risk being billed "Overdue" or "Late" fees. Dosimeters not returned within three months following the end of the wearing period will be billed an "Overdue" fee. Dosimeters not returned within 6 months following the end of the wearing period will be billed an additional "Late" fee.
Lost Fee	This fee is incurred when a client informs us that a dosimeter cannot be found and is lost.
Damaged Fee	This fee is incurred if a dosimeter is returned by a client and is damaged and cannot be read and/or reused.

***Note:** Please see the PSFS for a full listing of fees.*

4.2. Understanding Your Account Activity Report (invoice)

The Account Activity Report (AAR) is your invoice. AARs are issued on the 15th of every month and are payable no later than 30 days after the statement issue date.

The number of AARs you receive depends on your dosimeter service frequency (wearing cycle). If you are on a Semi-monthly or Monthly frequency (e.g. your group number starts with A, P, H or L), AARs will be issued on a monthly basis. All other wearing cycles will be issued AARs on a quarterly basis.

Your AAR covers services and/or payments received for a fixed period of time. Descriptions of items billed and/or paid can be found in the bottom box of your AAR labelled "Details of Account Activity Since Previous Report". The upper text box indicates your previous balance, current activities since last billing (all charges, credits and payments are lumped in one figure) and amount due.

TIP If your system requires an invoice number, we suggest that you use the following format: your group number/month/year.

Sample Account Activity Report

Health Canada Santé Canada

Your health and safety… our priority. *Votre santé et votre sécurité… notre priorité.*

National Dosimetry Services Account Activity Report

Providing personal, lifelong occupational monitoring for ionizing radiation, to Canadians everywhere

Local phone: (613) 954-6689; Fax: (613) 957-8698; Toll Free phone: (800) 261-6689; Fax: (800) 252-6272

XYZ DENTAL CLINIC
ATTN: DR. SMITH
123 MAIN STREET
YOUR CITY ON K1A 1C1

Make Payments to:
Receiver General for Canada
Health Canada- Santé Canada
Accts Receivable- Comptes à recevoir
Room – Piece B350
P/L 3203B – L/P 3203B
Ottawa ON K1A 0K9

Customer Reference Number X123456 **GST #R121491807**

Group Account #	Previous Account Balance +	Current Activities =	Payment Due	Amount Paid
T12345	237.56	-49.76	187.80	
Client ID			**Payment Due Date**	**Statement Date**
12345678			Oct 19, 2014	Sep 19, 2014

The Current Account Balance is due 30 days after production of the Account Activity Report.

Details of Account Activity since previous report **Group Account Number T12345**

Activity Date	Account Activity Descriptions	Qty	Unit Cost ($)	Sub Total	GST/HST	Total ($)
June 19, 2014	Previous account balance					237.56
June 28, 2014	Payment Received- Thank you					-237.56
Aug 3, 2014	Handling Charge	1	12.50	12.50	1.62	14.12
Aug 3, 2014	Dosimeter(s) issued including processing Wearing Date: 2014/09/01	29	5.30	153.70	19.98	173.68
Sep 19, 2014	Current account balance					187.80
	Please remember to send your payment To Health Canada, RM B350, PL 3203B, Ottawa ON K1A 0K9					

Canada

4.3. Making a Payment

You can pay your Account Activity Report (AAR) using any of the following options:

A. Electronic Bill Payment

In order to pay your bill electronically through the internet, you must first register with your Financial Institution.

Once you have done this, you will need your Client ID Number to pay your bill, which can be found on the AAR (below your Group Number).

After you have registered with your Financial Institution and located your Client ID number, log into your online banking account and choose Health Canada NDS/Santé Canada SND from the list of payees.

B. Cheque

Cheques are payable to the **Receiver General of Canada**. To ensure that your remittance is properly credited, please remember to note your **organization's name, Group Number and Customer Reference Number** on the cheque. In addition, include the tear-off portion of the AAR with your payment. It is advisable to make and retain a copy for your records.

Payments must be sent to the address on your AAR (also indicated below) as we have separate accounts from the Receiver General.

Payments can be mailed to:
Health Canada
Accounts Receivable, Room B350
P/L 3203B
Ottawa, ON K1A 0K9

C. Credit Card Payments

You can make a credit card payment using **Master Card, Visa or American Express**. Please contact the Revenue Management Unit at 1-800-261-6689 to make a payment.

D. Purchase Orders

Purchase orders are accepted and cover the period from April 1st to March 31st. All purchase orders, with the exception of those accompanying the Dosimetry Services Agreement form, must indicate your Group Number.

Purchase orders can be forwarded directly to us by mail, facsimile or email.

1. **Fax:** 1-800-252-6272
2. **Email:** nds-snd@hc-sc.gc.ca
3. **Mail:** National Dosimetry Services
   Radiation Protection Bureau
   775 Brookfield Road
   Address Locator 6301D
   Ottawa, ON K1A 1C1

E. Prepayments

You can pre-pay for your services for a twelve-month period effective from April 1st to March 31st of the following calendar year. To obtain an annual service cost estimate, contact our Revenue Management Unit at 1-800-261-6689.

4.4. Keeping Your Dosimetry Costs Down

You can avoid additional fees by following these steps:

FEE	ACTION
Overdue/Late Fees	Return all dosimeters following the end of the scheduled wearing period, even if they are unused. Keep track of outstanding dosimeters by reviewing your Exposure Report under the "Dosimeters Not Received by NDS" section. Additionally, you can contact us for an outstanding dosimeter listing.
Damaged Fee	Handle dosimeters with care and do not damage or expose them to radiation in any way that would not represent an actual occupational exposure.
Lost Fee	When not in use, store dosimeters in one central location (away from the radiation source). Return dosimeters immediately at the end of the wearing period.
Ad-hoc Fee	To avoid the cost of requesting additional dosimeters, make sure to communicate your account changes to us in a timely manner. If you are on a quarterly service, ensure that all required changes are requested and received ***30 days*** prior to the start of your next wearing period and ***20 days*** prior if you are on a semi-monthly or monthly service. To eliminate these costs, request that "spare" dosimeters be sent with each regular shipment. These "spare" dosimeters can be assigned to staff members or visitors, therefore eliminating the need for an ad-hoc dosimeter request.

4.5. Credits

If you have been billed the Overdue, Late or Lost fee for a dosimeter and subsequently return the dosimeter undamaged, you are entitled to a partial credit. Please refer to the Products, Services and Fee Schedule for related charges and credits.

5. YOUR DOSIMETER

5.1. Thermoluminescent Dosimeter (TLD)

Product Overview

TLD dosimeters provide x-ray, gamma and beta radiation monitoring using thermoluminescence technology. The dosimeter is assembled by enclosing the dosimeter card in the holder. All TLD dosimeters are labelled with a unique serial number that identifies the dosimeter assignment.

Our TLDs come in two different types of holders. The first is a solid plastic casing that is used for whole body and/or head/neck wearer's. The second is a plastic pouch with a Velcro strap that is used for extremity arm and/or leg wearer's.

What's in your TLD Shipment?

Included in your first shipment you will find:

TLD Dosimeter Cards and Holders	Depending on your subscription level, you will receive each shipment in the following manner: **Pre-loaded Subscribers:** Each shipment will be received with the dosimeter cards pre-loaded into the holders with the user's names affixed and ready to use. **Non-preloaded Subscribers:** Your first shipment will contain dosimeter cards and holders. Each subsequent shipment will contain dosimeter cards only (unless additional holders have been requested). You are responsible for loading your dosimeter cards into the holders prior to use and unloading dosimeter cards prior to returning for processing. Please refer to "Guidelines For Loading Dosimeter Cards" (the following section) for more information.
Opening Tool (non-preloaded groups)	The opening tool is used to open your holder so you can load and unload your dosimeter cards. For specific instructions on how to use the opening tool, please refer to "Guidelines for Loading Dosimeter Cards" (the following section) for more information.
The Name List	The Name List is similar to a packing slip and contains important information about your shipment. Please verify that the dosimeters received correspond with the dosimeter serial numbers listed on your Name List. Please contact us if any discrepancies are found. You can also use the Name List to communicate account changes to us. Please see section **3.1 How to Make Changes to Your Account** for more information.
A Return Prepaid Label	A return prepaid label will also be found in the shipment. You should affix this label to the envelope/box and return your old dosimeters to us for processing. Please remember to keep your tracking number for your records.
Mailing Box	Your dosimeters will be mailed to you in a reusable box. This box will be used to return your old dosimeters to us for processing. For instructions on how to return your dosimeter shipment to us, please refer to section **3.2 Returning Your Dosimeter Shipments**.

Guidelines For Loading Dosimeter Cards (*non-preloaded groups only)

PRIOR TO LOADING:

- Remove dosimeters from the yellow cardboard protectors minimizing the time during which the dosimeter card is exposed to direct light.
- Assemble the dosimeter in a clean environment free of dust and possible contaminants such as food, drinks, lotion, etc.

- Ensure the dosimeter holder is in good condition: (e.g. the silver foil is present, intact and completely covers the holes in the holder; the cork gasket is present, in good condition and forms an unbroken seal between the sleeve and insert; check to make sure that the transparent window is in good condition).
- Never apply a name label or other materials to the dosimeter card as adhesive substances can cause damage to the card, which in turn may affect the dosimetry analysis and/or damage the dosimeter reading equipment.

TO LOAD THE DOSIMETERS, PLEASE FOLLOW THESE STEPS:

- Insert the pins of the opening tool into the two small holes at the back of the dosimeter holder so that the opening tool surrounds the clip.
- Apply slight pressure with the thumb and fingers to the opening tool, rocking it forward and backwards. This has the effect of depressing the locking tabs and pushing the insert out.
- Remove the opening tool, turn the holder over so that the front is now facing upward and withdraw the insert.
- Place the dosimeter card into the insert and slide the insert into the dosimeter holder, ensuring that the holder closes tightly. The dosimeter card insert is designed to accept the dosimeter card in one position only.
- Ensure that the dosimeter card identification number faces the front of the holder and is visible through the window.
- **Loading wrist holders:** Insert the dosimeter card into the front sleeve of the holder with dosimeter number facing upwards.

Wearing Your TLD

TLDs can be worn at five different wearing locations. The location is determined by the area of your body most likely to be exposed to radiation. Please see the "Type/Location" section on your Name List to determine the wearing location of your dosimeter.

WEARING LOCATION	EXTREMITY CODE	HOLDER TYPE	DESCRIPTION
Whole Body	Ext. 0	Solid plastic casing	To be worn above the waist and below the shoulders (under the lead apron if one is used). Can be clipped onto clothing, but not to be worn inside the pocket. If a fetal dosimeter is being worn, wear in front of the abdomen (under the lead apron if one is used).
Head/Neck	Ext. 1	Solid plastic casing	To be worn at the neck level, outside of the thyroid collar. Can be clipped to clothing.
Left Arm/Wrist Right Arm/Wrist	Ext. 2-left Ext. 3-right	Plastic pouch with Velcro	Must be worn below the elbow. The dosimeter should be facing the source of radiation.
Left Foot/ Leg Right Foot/Leg	Ext. 4-left Ext. 5-right	Plastic pouch with Velcro	Must be worn below the knee.

NOTE: If your regulator requires that your dosimeters be worn at a location different from that specified on your Name List, please contact us so that the information can be updated.

If you have additional questions about where your dosimeter should be worn, you should contact your regulator. Please refer to section **2.6 Regulatory Environment**.

Technical Specifications

Whole Body and Head/Neck Dosimeter

Dosimeter Type	Passive
Radiation Detected	X-ray, Gamma and Beta
Wear Location	Whole Body, Head or Neck Extremity
Doses Reported	$H_p(10)$ (Deep Dose) and $H_p(0.07)$ (Shallow Dose)
Energy Response	Photon (X-ray and Gamma): 16 keV to in excess of 1250 keV Beta (Max): 763 keV to in excess of 2274 keV
Reporting Threshold	0.10 mSv

Wrist and Foot Dosimeter

Dosimeter Type	Passive
Radiation Detected	X-ray, Gamma and Beta
Wear Location	Wrist/Arm or Foot/Leg Extremity
Doses Reported	$H_p(0.07)$ (Shallow Dose)
Energy Response	Photon (X-ray and Gamma): 33 keV to in excess of 1250 keV Beta (Max): 763 keV to in excess of 2274 keV
Reporting Threshold	0.10 mSv

5.2. Ring Dosimeter

Product Overview

Ring dosimeters provide x-ray, gamma and beta radiation monitoring using thermoluminescence technology. The dosimeter is assembled by enclosing a thermoluminescence dosimeter (TLD) element in a ring shaped dosimeter holder with the dosimeter identification label pasted on top. A heat shrunk plastic covering is then added to make the dosimeter water resistant. All ring dosimeters are labelled with a unique serial number that identifies the dosimeter assignment. Ring dosimeters are available in two sizes—large (green ring band) and small (white ring band).

What's in your Ring Dosimeter Shipment?

Included in your first shipment you will find:

Ring Dosimeters	Your ring dosimeters come ready for use. The label identifies the dosimeter serial number.
Control Dosimeter	The control dosimeter is used to measure background radiation (i.e. non-occupational radiation exposures). Please refer to section **3.4 Control and Area Dosimeters** for more information.
The Name List	The Name List is similar to a packing slip and contains important information about your shipment. Please verify that the dosimeters received correspond with the dosimeter serial numbers listed on your Name List. Please contact us with any discrepancies found. You can also use the Name List to communicate account changes to us. Please see section **3.1 How to Make Changes to Your Account** for more information.
A Return Prepaid Label	A return prepaid label will also be found in the shipment. You should affix this label to the envelope/box and return your old dosimeters to us for processing. Please remember to keep your tracking number for your records.
Mailing Box	Your dosimeters will be mailed to you in a reusable box. This box will be used to return your old dosimeters to us for processing. For instructions on how to return your dosimeter shipment to us, please refer to section **3.2 Returning Your Dosimeter Shipments**.

Wearing your Ring Dosimeter

Ring dosimeters can be worn at 2 different wearing locations. The location is determined by the area of your body most likely to be exposed to radiation. Please see the "Type/Location" section on your Name List to determine the wearing location of your dosimeter.

WEARING LOCATION	EXTREMITY CODE	DESCRIPTION
Left Hand	Ext. 2	Must be worn on left hand
Right Hand	Ext. 3	Must be worn on right hand

NOTE: If your regulator requires that your dosimeters be worn at a location different from that specified on your Name List, please contact us so that the information can be updated.

If you have additional questions about where your dosimeter should be worn, you can contact your regulator. Please refer to section **2.6 Regulatory Environment** for more information.

Technical Specifications

Dosimeter Type	Passive
Radiation Detected	X-ray, Gamma and Beta
Wear Location	Hand or Arm Extremity
Doses Reported	$H_p(0.07)$ (Shallow Dose)
Energy Response	Photon (X-ray and Gamma): 33 keV to in excess of 1250 keV Beta (Max): 763 keV to in excess of 2274 keV
Reporting Threshold	1.00 mSv

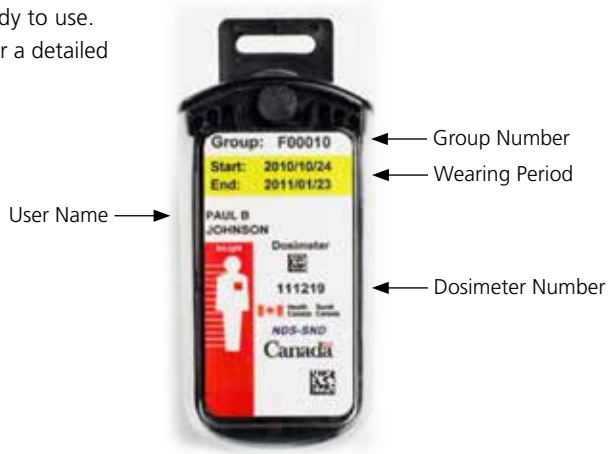
5.3. Inlight Dosimeter

Product Overview

InLight dosimeters provide x-ray, gamma and beta radiation monitoring using optically stimulated luminescence (OSL) technology. Each InLight dosimeter comes fully assembled in a dosimeter holder labelled with the wearer's name, the wearing period start and end dates, the dosimeter serial number and a unique barcode.

What's in your InLight Shipment?

Included in your first shipment you will find:

InLight Dosimeters	All InLight dosimeters come ready to use. Please see the diagram below for a detailed description of the InLight label. 
Control Dosimeter	The control dosimeter is used to measure background radiation (i.e. non-occupational radiation exposures). Please refer to section **3.4 Control and Area Dosimeters** for more information.
Detachable Clips	A detachable clip has been provided for each of your InLight dosimeters. The clips are to be attached to the dosimeters and can be fastened to your clothing. **The clips are to be kept at your location and should not be returned.** You are to remove and keep the clips prior to returning old dosimeters to us for processing. If you prefer a different fastening mechanism, you can use your own. However, please do not place the dosimeter in a pouch or carrying case as this may affect the dosimeter's reading.
The Name List	The Name List is similar to a packing slip and contains important information about your shipment. Please verify that the dosimeters received correspond with the dosimeter serial numbers listed on your Name List. Please contact us with any discrepancies found. You can also use the Name List to communicate account changes to us. Please see section **3.1 How to Make Changes to Your Account** for more information.
A Return Prepaid Label	A return prepaid label will also be found in the shipment. You should affix this label to the envelope/box and return your old dosimeters to us for processing. Please remember to keep your tracking number for your records.
Mailing Envelope or Box	Your dosimeters will be mailed to you in either an envelope or box, depending on the number of dosimeters requested. All groups with 15 dosimeters or fewer will receive their shipments in an envelope. All groups with 16 or more dosimeters will receive their shipments in a box. The envelopes/boxes are reusable and will be used to return old dosimeters to us for processing. Please refer to section **3.2 Returning Your Dosimeters** for more information on how to return your dosimeters for processing.

Wearing your InLight Dosimeter

InLight dosimeter can be worn at one wearing location:

LOCATION	EXTREMITY CODE	DESCRIPTION
Whole body	Extremity 0	Should be worn above the waist and below the shoulders, under the lead apron when one is used. Can be clipped to clothing, not to be worn inside the pocket.

NOTE: If you have additional questions about where your dosimeter should be worn, you can contact your regulator. Please refer to section **2.6 Regulatory Environment** for more information.

Technical Specifications

Dosimeter Type	Passive
Radiation Detected	X-ray, Gamma and Beta
Wearing Location	Whole Body
Doses Reported	$H_p(10)$, mSv ("Deep Dose" or "Body Dose") $H_p(0.07)$, mSv ("Shallow Dose" or "Skin Dose")
Energy Response	Photon (X-ray and Gamma): 16 keV to in excess of 1250 keV Beta (Max): 763 keV to in excess of 2274 keV
Reporting Threshold	0.10 mSv

5.4. Electronic Personal Dosimeter (EPD®)

Product Overview

The Electronic Personal Dosimeter, or the EPD®, is a personal radiation monitor that detects and measures beta and photon radiation. Radiation that is detected by the EPD® is processed to give a real time readout via a liquid crystal display (LCD) for deep dose, skin dose and the dose rates.

What's in Your EPD Shipment?

EPDs	Your EPDs® will arrive with pre-set configurations and are ready to use. Please see the "Configurations" section for a description of your EPD's® configurations and display functions.
Replacement Batteries	Some additional batteries have also been included in your shipment that should be used when the "low battery indicator" is displayed.
The Name List	The Name List is similar to a packing slip and contains important information about your shipment. Please verify that the dosimeters received correspond with the dosimeter serial numbers listed on your Name List. Please contact us with any discrepancies found. You can also use the Name List to communicate account changes to us. Please see section **3.1 How to Make Changes to Your Account** for more information.
A Return Prepaid Label	A return prepaid label will also be found in the shipment. You should affix this label to the box and return your old dosimeters to us. Please remember to keep your tracking number for your records.
Mailing Box	Your EPDs® will be mailed to you in a reusable box. This box will be used to return your old EPDs® to us at the end of the wearing period. For instructions on how to return your EPD® shipment to us, please refer to section **3.2 Returning Your Dosimeters**.

Configurations

The following is a brief description of the parameters and display functions that have been programmed into your EPD®.

A. LCD DISPLAYS

Please find below the display features on your EPD®. Please note, H_p10 represents the deep dose and H_p 0.07 represents the skin dose.

VISIBLE DISPLAYS	
H_p10	Dose Display
	Dose Rate Display
H_p 0.07	Dose Display
	Dose Rate Display

DEFAULT DISPLAYS
H_p10 Mode Dose Display

B. ALARMS

Your EPD's® alarm will sound when the following thresholds are reached:

DOSE ALARM THRESHOLDS (mSv)	
H_p10 (1)	15.00
H_p10 (2)	20.00
H_p 0.07	150.00

RATE ALARM THRESHOLDS (µSv/h)			TOTAL TIME TO REACH	
	Off	**On**	**15 mSv**	**20 mSv**
H_p10 (1)	20	25	24 days	33.0 days
H_p10 (2)	2,000	2,500	6 hours	8.0 days
H_p 0.07	20,000	25,000		

Rationale for Dose Alarm Thresholds

The maximum dose alarm threshold for H_p10 is based on the International Commission on Radiological Protection's (ICRP) recommendation that an occupational exposure shall not exceed an average of 20 mSv in a year. Although this dosimeter is intended for non-radiation workers it is impractical to set and monitor at the general public rate of 1mSv/year.

Audible Alarm Settings

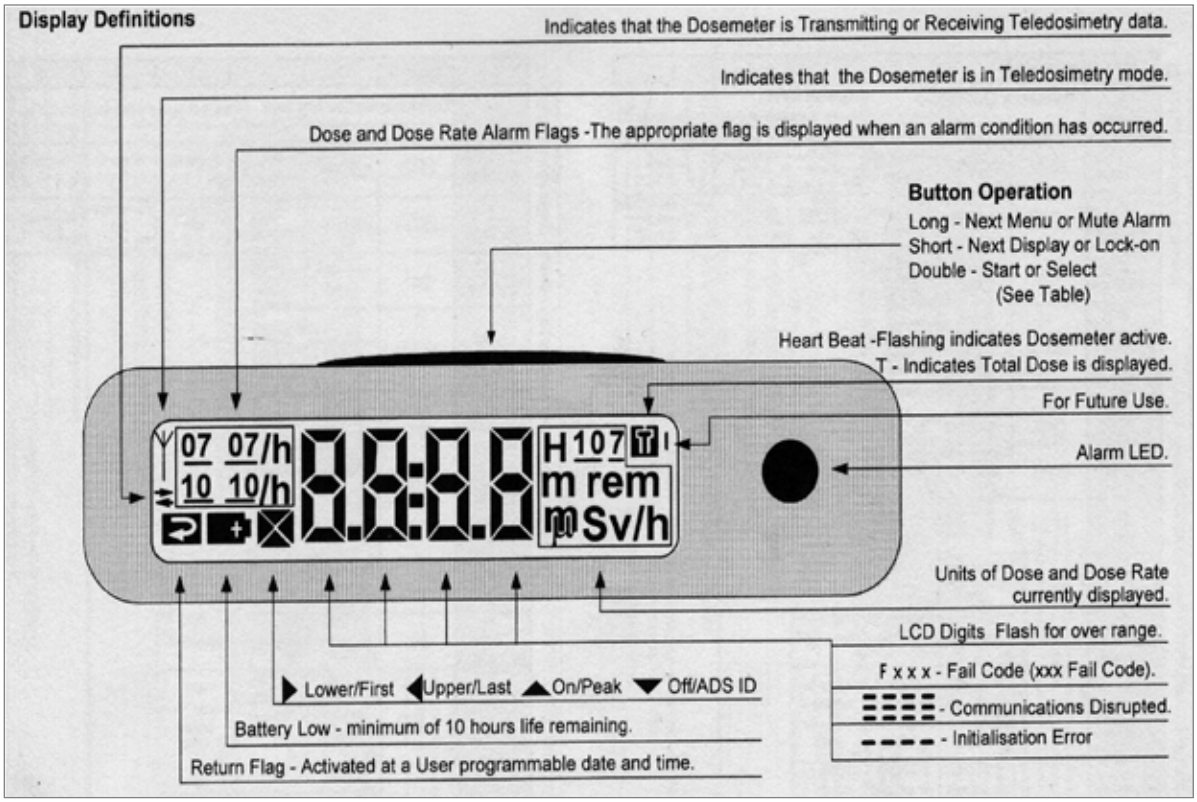
There are three dose alarm flags that indicate a dose has exceeded the corresponding dose alarm thresholds. There are 1st and 2nd dose alarms for H_p10 and a single alarm for H_p 0.07. There are also three dose rate alarm flags that indicate a dose rate has exceeded the dose rate alarm thresholds. There are 1st and 2nd dose rate alarms for H_p10/h and a single dose rate alarm for H_p 0.07/h. Alarms are acknowledged by pressing the button (long press). This action will extinguish the alarm LED and mute the sounder whereupon appropriate response action should be taken.

H_p10 (1)	Quiet – Low Frequency – Intermittent – Single – Slow
H_p10 (2)	Loud – High Frequency – Intermittent – Double Beep – Single – Slow
H_p 0.07	Loud – High Frequency – Continuous – Single Tone

H_p10 (1) Rate Alarm	Quiet – High Frequency – Intermittent – Single – Fast
H_p10 (2) Rate Alarm	Loud – High Frequency – Intermittent – Double Beep – Single – Fast
H_p 0.07 Rate Alarm	Loud – High Frequency – Continuous – Dual Tone – Slow

C. DISPLAY FUNCTIONS

Please find below a description of your EPD's display.



Wearing Your EPD®

EPDs® can be worn at one wearing location:

LOCATION	EXTREMITY CODE	DESCRIPTION
Whole body	Extremity 0	Should be worn above the waist and below the shoulders. Can be clipped to clothing, not to be worn inside the pocket.

NOTE: Your EPD® will be worn for a *1 year period* and then returned for calibration and maintenance. You will receive replacement EPDs® approximately 10 days prior to your next scheduled change over date. We ask that you promptly return the used EPDs® to us at the end of the wearing period to ensure you will not be subject to late fees. Please note, if you do not receive your replacement EPDs® by your change over date, please contact us.

The EPD® is not licensed to be used as a "Dose of Record" and dose data is not sent to the National Dose Registry (NDR). An EPD® is meant to be used as a dose management tool and can be used in conjunction with a passive dosimeter (e.g. TLD, InLight dosimeter, etc.).

Technical Specifications

Dosimeter Type	Active
Radiation Detected	Beta, Gamma and X-Ray
Wear Location	Whole Body
Doses Reported	$H_p(10)$, mSv (“Deep Dose” or “Body Dose”) $H_p(0.07)$, mSv (“Shallow Dose” or “Skin Dose”)
Energy Response	Gamma, X-Ray: 15 keV to 10 MeV Beta: 250 keV to 1.5 MeV
Power Supply	Single AA 1.5V alkaline battery for approximately 8 weeks continuous operation, or 3.6 V Lithium battery for approximately 5 months continuous operation
Display Units	Sieverts (Sv) or rem (with prefixes)
Dose Display and Storage	0 µSv to 16 Sv
Display Threshold	1 µSv

Additional Terms and Conditions

- EPDs will be billed an “Overdue” fee if not returned 3 months following the end of the assigned wearing period.
- EPDs will be billed a “Late” fee if not returned after an additional 3 months, for a total of 6 months following the end of the assigned wearing period.
- “Lost” or “Damaged” (if the unit cannot be reused) EPDs will be charged a fee.

NOTE: For EPD(s) that have been declared ALost@, a partial credit will be issued if the EPD(s) is found and returned. Additionally, a partial credit will be issued for EPD(s) that are returned after incurring the AOverdue@ and/or “Late” fees.

6. TERMS AND CONDITIONS

- NDS reserves the right to revise its Products, Services and Fee schedule on an annual basis; prior written notification regarding any such change will be issued to clients.
- All fees associated with your dosimetry services are in accordance with our Products, Services and Fee Schedule.
- Invoices, referred to as your Account Activity Reports (AAR), are issued on the 15th of every month and payment is due **no later than thirty (30) days after the statement issue date**. Overdue accounts are charged interest which is compounded monthly, at the average monthly Bank of Canada rate, plus three per cent. Failure to pay within the time allowed may result in either suspension or cancellation of service.
- Each year, on April 1st, NDS will automatically renew your annual subscription service level and bill your account for these charges. Therefore, termination of service after this date will be subject to the Annual Subscription fee where financial adjustments may not be applied.
- All new or renewed groups are subject to the one-time enrollment set-up fee.
- Customers who miss the applicable deadline for returning their dosimeters will be subject to an "Overdue"/"Late" fee.
- Additional dosimeter shipments requested within an existing wearing period will be subject to an ad-hoc processing fee plus applicable handling charges.
- Dosimeter products (includes holders) that are returned damaged and/or contaminated will be subject to a damaged fee.
- Personal, mandatory information is required to create an individual's lifetime exposure record within the National Dose Registry (NDR). Life time exposure data will not be maintained within the NDR for an individual who does not supply their mandatory information.
- Clients must retain their tracking number found on the pre-paid return postage label included with their shipment of dosimeters. **Clients who do not retain their tracking number may be subject to a lost fee if a shipment has been lost in the mail.**

Termination and Suspension of Service

Dosimetry services remain active until a written notification has been received by letter mail, facsimile, email or by making a notation on your returned name list.

Notice for termination of service must be received in writing **at least 30 days prior to the start of your next wearing period for quarterly frequency groups and 20 days prior for monthly or semi-monthly frequency groups** in order to avoid additional processing fees.

Dosimetry services are **not transferable** upon change of business ownership. Services must be terminated and the new owner can apply for service.

Dosimetry services may be temporarily suspended upon request. Please notify NDS **at least 30 days prior to the start of your next wearing period for quarterly frequency groups and 20 days prior for monthly or semi-monthly frequency groups** to avoid additional processing fees. Please note that the annual subscription fee still applies when the service is in a suspended state (excludes pregnancy service).

Dosimeter cards, holders and opening tools are the property of NDS. These items are provided to you on a rental basis only and must be returned to NDS upon termination of service.