



NCS 00-010

Delft, 9 March 2000

ANNUAL REPORT 1999

Objective

The Nederlandse Commissie voor Stralingsdosimetrie (NCS, Netherlands Commission on Radiation Dosimetry) has been established on 3 September 1982 with the main objective of promoting the appropriate use of radiation dosimetry, both for radiation research as for practical applications. The NCS is chaired by a board of scientists, installed in consultation with the supporting societies:

- Nederlandse Vereniging voor Radiotherapie en Oncologie (NVRO, Netherlands Society for Radiotherapy and Oncology);
- Nederlandse Vereniging voor Nucleaire Geneeskunde (NVNG, Netherlands Society for Nuclear Medicine);
- Nederlandse Vereniging voor Klinische Fysica (NVKF, Netherlands Society for Clinical Physics);
- Nederlandse Vereniging voor Radiobiologie (NVRB, Netherlands Society for Radiobiology);
- Nederlandse Vereniging voor Stralingshygiëne (NVS, Netherlands Society for Radiological Protection);
- Nederlandse Vereniging van Radiologisch Laboranten (NVRL, Netherlands Society of Radiographers and Radiological Technologists);
- Nederlandse Vereniging voor Radiologie (NVvR, Netherlands Society for Radiology);
- Société Belge des Physiciens des Hospitaux (SBPH), Belgische Vereniging voor Ziekenhuis Fysici (BVZF, Belgian Hospital Physicist Association).

To pursue its aims, the NCS has the following tasks:

- participation in dosimetry standardisation and promotion of dosimetry intercomparisons;
- drafting of dosimetry protocols;
- collection and evaluation of physical data related to radiation dosimetry;
- maintain or establish links with national and international organizations concerned with ionizing radiation;
- promulgate information on new developments in the field of radiation dosimetry.

secretary:

ir. W. de Vries, Nederlands Meetinstituut
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Board

In 1999 the members of the board of the NCS were:

| | | |
|---------------------------------|--------|------------------------|
| Prof.dr. J.J. Broerse, chairman | (NVRO) | |
| Ir. W. de Vries, secretary | (NMI) | |
| Dr. J. Zoetelief, treasurer | (NVRB) | |
| Dr. A.J.J. Bos | (NVS) | |
| Mw.dr. W.C.A.M. Buijs | (NVNG) | |
| Drs. A. van Dalen | (NVvR) | from 15 June 1999 |
| Drs. R.B. Keus | (NVRO) | until 15 November 1999 |
| Ir. J.L.M. Venselaar | (NVKF) | until 15 November 1999 |
| Dr. S. Vynckier | (BVZF) | observer |
| Dr.ir. F.W. Wittkämper | (NVKF) | |
| D. Zweers | (NVRL) | |

The board of the NCS met three times in 1999, on 22 March, 22 June and 15 November. The main subjects raised at the board meetings were:

- monitoring the progress of activities by subcommittees;
- initiate the publication of NCS-reports;
- the development of new activities;
- the organisation of a symposium on "Radiation Risks and Dose Assessment" in October 1999.

Although several articles have been published in scientific journals, NCS-reports have not reached their final stage in 1999. Several subcommittees have set the date for publication of their report in the year 2000.

The NCS produced a website named: <http://www.ncs-dos.org/>.

Subcommittees

1. *Subcommittee "Uniformity of Dosimetry Protocols in the Netherlands"*

This subcommittee was reinstalled at the end of 1999 to update NCS-reports 2 and 5 on "dose to water". New members will be selected in the beginning of 2000.

2. *Subcommittee "Dose Calculations in Megavoltage Photon Beams"*

The aim of the subcommittee is to prepare recommendations for the methods of dose calculations in megavoltage photon beam therapy. The subcommittee met five times in the year 1999. Attention has been focussed mainly on the applicability of the previously published formalism (see NCS Report 12, 1998) in the beam geometries with asymmetrical open and wedged fields. In preparation of a protocol for performing measurements in clinical settings two articles were published.

- A consistent formalism for the application of phantom and collimator scatter factors. J.L.M. Venselaar, J.J.M. van Gasteren, S. Heukelom, H.N. Jager, B.J. Mijnheer, R. van der Laarse, H.J. van Kleffens, C.F. Westermann. Phys. Med. Biol. 44 (1999) 365-381.
- Effect of electron contamination on scatter correction factors for photon beam dosimetry. J.L.M. Venselaar, S. Heukelom, N. Jager, B.J. Mijnheer, R. van der Laarse, J.J.M. van Gasteren, H.J. van Kleffens, C.F. Westermann. Medical Physics, 26 (1999) 2099-2106.

Members of the subcommittee continued their work towards other publications related to the Report 12.

Membership of the subcommittee:
Dr. J.J.M. van Gasteren, (chairman),
Dr. S. Heukelom,
Ir. H.N. Jager,
Dr. R. van der Laarse,
Dr. B.J. Mijnheer,
Ir. T. Tiourina (until June 1999)
Ir. J.P.C. van Santvoort (from June 1999)
Ir. J.L.M. Venselaar,
Drs. J. Welleweerd,
Ir. C.F. Westermann.

3. Subcommittee "Dosimetry in Radiology"

The subcommittee on dosimetry in radiology held meetings on 21 June and 6 December, 1999. Drafts of five chapters were discussed and improved. The chapters on introduction, radiation protection of workers and conclusions still have to be written. From the appendices one is available and two have to be prepared. It is anticipated that the final version will be available by the end of 2000. Van Unnik from the Netherlands Society for Radiology is asked to become a member of the subcommittee.

Membership of the subcommittee:
Dr. J. Zoetelief (chairman)
Dr. J. Geleijns (secretary)
Prof. dr. J.J. Broerse
Dr.ir. P.J.H. Kicken
Mr. W. Teeuwisse
Ir. W. de Vries
Mr. D. Zweers

4. Subcommittee "Treatment planning systems"

In 1996 the NCS installed the task group Treatment Planning Systems in order to produce a report with guidelines for the quality assurance (QA) of 3-D treatment planning systems (TPS). By mid 1999 most chapters of this report had been written, but some parts still had to be filled in. Many colleagues in radiation therapy institutions, however, had repeatedly expressed the need for more information on the QA of 3-D TPS. Therefore the task group decided not to wait until all chapters were in final form and then publish an official NCS report, but started to aim at general access to the material as soon as possible. In the second half of 1999 the existing material was prepared for "electronic publication" on the website of the NCS (www.ncs-dos.org). This will be a preliminary report and should be considered as work in progress. The readers will be encouraged to send comments and this feedback will be used to improve the report. During 2000 new versions of the various chapters will replace the present ones and missing chapters will be added.

Membership of the subcommittee:

Dr. I.A.D. Bruinvis (chairman)

Drs. R.B. Keus

Drs. W.J.M. Lenglet

Drs. G.J. Meijer

Dr. B.J. Mijnheer

Drs. A.A. van 't Veld

Ir. J.L.M. Venselaar

Drs. J. Welleweerd

Ir. E. Woudstra

5. Subcommittee "Quality assurance of brachytherapy systems"

The taskgroup 'Quality assurance of brachytherapy systems', which was established in 1997, has met five times in 1999.

The consistency of brachytherapy treatment planning was deducted from site visits in the first half of the year in The Netherlands and the second half in Belgium. The reconstruction accuracy was established by comparing the coordinates of 25 markers in a lucite phantom reconstructed by the institutions to the well known coordinates. In order to determine the accuracy of the dose delivery the institutions were asked to generate a treatment plan for a given geometry. This plan has been executed and the measured dose has been compared to the calculated dose.

The inventory of the current practice of QA in combination with the results of the site visits and international literature has resulted in a draft of an NCS report with minimum requirements for QA in brachytherapy. This draft will be sent to all institutions in The Netherlands and Belgium in the beginning of 2000 and will be made available on the NCS-website (<http://www.ncs-dos.org/>).

In 1999 the following presentations were prepared based on the work of the taskgroup:

- 1 RJM Elfrink, IKK Kolkman-Deurloo, HJ van Kleffens, AHL Aalbers, WJF Dries, C Mangold, A Rijnders, B Schaeken, JLM Venselaar. 'Intercomparison of Quality Assurance in Brachytherapy in The Netherlands and Belgium'. Annual Brachytherapy Meeting GEC-ESTRO, Groupe Européen de

- Curiethérapie, European Society for Therapeutic Radiology & Oncology, 10-12 mei 1999, Zeist, The Netherlands. (Abstract: Radiotherapy and Oncology Vol. 51 suppl. 2, May 1999, p. S8)
- 2 Herman van Kleffens, Robert Elfrink, Inger-Karine Kolkman-Deurloo, Gert Meijer and Ben Mijnheer. 'The development and implementation of minimum requirements for Quality Control in radiotherapy in the Netherlands'. VI International Conference on Medical Physics, European Federation of Organizations for Medical Physics-EFOMP, 1-4 september 1999, Patras, Greece. (Abstract: Physica Medica, vol.XV, nr.3, July-September 1999, p. 170)
- 3 B Schaeken, RJM Elfrink, A Rijnders, IKK Kolkman-Deurloo, HJ van Kleffens, AHL Aalbers, WJF Dries, JLM Venselaar. 'Results of an intercomparison of QA in Brachytherapy in Belgium and The Netherlands'. 15th Symposium of the BVZF/SBPH (Belgian Hospital Physicists Society), 3 - 4 december 1999, Antwerp, Belgium.

Membership of the subcommittee:

Ir. I.K.K. Kolkman-Deurloo (chairman)

Drs. A.H.L. Aalbers

Ir. W.J.F. Dries

Ir. R.J.M. Elfrink

Ir. H.J. van Kleffens

Ing. A. Rijnders

Dr. B. Schaeken

Ir. J.L.M. Venselaar

6. *Advisory platforms 'radiology and nuclear medicine' and 'radiotherapy'*

In 1999 the NCS has installed two platforms with the objective to provide support and advice for research projects in radiation dosimetry. The platform on radiology and nuclear medicine had two meetings with scientists from TNO and from RIVM on the projects "Reference values diagnostic radiology" and "Registration of doses due to medical applications IMS". The platform on radiotherapy convened once to advise the RIVM on the project IMS. Negotiations have been initiated with the Ministry of Health, Welfare and Sport to formalize this function for the NCS.

Membership advisory platform 'radiology and nuclear medicine':

Drs. J. van Unnik (chairman)

Dr. J. Geleijns (secretary)

N. de Haan

F. Felderhof

Dr.ir. P.J.H. Kicken

Ir. A.H.J. Renders

Prof.dr. J.J. Broerse

Membership advisory platform 'radiotherapy':

Prof.dr. J.J. Broerse (chairman)

Ir. W. de Vries (secretary)

Drs. E.N.J.T. van Lin

F. Cavelaars

Dr. R.W. de Boer

Ir. C.F. Westermann

NCS FINANCIAL OVERVIEW 1999

| | <i>Income</i> (NLG) | <i>Costs</i> (NLG) |
|--|------------------------|-----------------------|
| Savings-account on December 31, 1998 | 15480.43 | |
| Current-account on December 31, 1998 | 4922.87 | |
| Contribution Netherlands Society for Radiology 1999+2000 | 2000.00 | |
| Contribution Netherlands Society for Clinical Physics 1999 | 00.00 | |
| Contribution Netherlands Society for Radiotherapy and Oncology 1999 | 1500.00 | |
| Contribution Netherlands Society for Nuclear Medicine 1999 | 200.00 | |
| Contribution Netherlands Society for Radiological Protection 1999 | 300.00 | |
| Contribution Netherlands Society for Radiobiology 1999 | 165.00 | |
| Contribution Netherlands Society for Radiographers and Radiological Technologists 1998 + 1999 | 500.00 | |
| Interest savings-account | 381.75 | |
| Sales of NCS Reports | 1275.00 | |
| Costs Chamber of Commerce | | 82.90 |
| Banking costs | | 63.70 |
| Costs of board and subcommittees meetings | | 916.76 |
| Costs web site | | 819.17 |
| Cheques and cash | | 389.00 |
| Savings-account on December 31, 1999 | | 15862.18 |
| Current-account on December 31, 1999 | | <u>8591.34</u> |
| Total | <u>26725.05</u> | <u>26725.05</u> |

NCS BUDGET 2000

| | | |
|--|-----------------|-----------------|
| Contributions scientific societies | 2865.00 | |
| Interest savings-account | 385.00 | |
| Sales of NCS Reports | 1000.00 | |
| Contributions from others to printing costs of NCS Reports | 2625.00 | |
| Commitment LUMC, TNO, NCS, IRI, NRVB symposium 1999 | 5000.00 | |
| Costs Chamber of Commerce | | 50.00 |
| Banking costs | | 75.00 |
| Costs of board and subcommittees meetings | | 1000.00 |
| Costs web site | | 750.00 |
| Costs of printing NCS Reports | | 5000.00 |
| Costs LUMC, TNO, NCS, IRI, NRVB symposium 1999 | | <u>5000.00</u> |
| Total | <u>11875.00</u> | <u>11875.00</u> |