

# RADIATION DOSIMETRY ACTIVITIES IN THE NETHERLANDS

## INVENTORY COMPILED UNDER THE AUSPICES OF THE NETHERLANDS COMMISSION FOR RADIATION DOSIMETRY

J.J. Broerse  
Radiobiological Institute TNO  
P.O. Box 5815  
2280 HV Rijswijk

and

B.J. Mijnheer  
Netherlands Cancer Institute  
Antoni van Leeuwenhoekhuis  
Plesmanlaan 121  
1066 CX Amsterdam  
The Netherlands

July 1986

RADIATION DOSE-METRY ACTIVITIES IN THE NETHERLANDS

INVENTORY COMPILED UNDER THE AUSPICES OF THE  
NETHERLANDS COMMISSION FOR RADIATION DOSE-METRY

J. J. G. van  
Radiologische Instelling TNO  
P.O. Box 5815  
3720 CB Bilthoven

and

B. J. J. M. van  
Nederlandsche Cancer Instituut  
Arton van Leeuwenhoeklaan  
Blaauwbaan 121  
1085 CX Amsterdam  
The Netherlands

July 1988

## 1. INTRODUCTION

The Netherlands Commission for Radiation Dosimetry (NCS) was officially established on 3 September 1982 with the aim of promoting the appropriate use of dosimetry of ionizing radiation both for scientific research and practical applications. The foundation is chaired by a scientific council installed upon the suggestion of the supporting societies including the Group of Radiation Physicists, the Netherlands Society for Clinical Physics, the Netherlands Society for Nuclear Medicine, the Netherlands Society for Radiobiology, the Netherlands Society for Radiotherapy, the Netherlands Society for Radiation Hygiene and the Institute of Public Health and Environmental Hygiene. To pursue its aims the Netherlands Commission for Radiation Dosimetry has initiated a number of activities among others collection and evaluation of physical data for dosimetry in radiotherapy, X-ray diagnosis and nuclear medicine, drafting of dosimetry protocols, participation in dosimetry standardisation and promotion of dosimetry intercomparisons.

The present report provides a compilation of the dosimetry activities and expertise available in the Netherlands, based on the replies to a questionnaire mailed under the auspices of the NCS and might suffer from some incompleteness in specific details. The addresses of the Dutch groups with the names of the scientists are given in section 2. Individual scientists, not connected with a scientific group, hospital or organization have not been included in this list. Also the names of commercial firms producing dosimetric systems have been omitted.

The participants are grouped according to their principal interests in section 3.1, and to their main activities in section 3.2. The types of radiation employed by the different groups are summarized in section 3.3. and the dosimetry techniques available at the institute in section 3.4. The report ends with a reference list of communications published by the participating institutes on radiation dosimetry in the period 1978-1986.

It is expected that this report will intensify the contacts between the different Dutch institutes. Reprints of the papers mentioned in the reference list can be obtained from the individual scientists upon request. It is further anticipated that this report will have catalytic consequences for cooperation and will avoid unnecessary duplication of research on dosimetry of ionizing radiation. Further copies of this report are available at the NCS secretariat, P.O. Box 1, 3720 BA Bilthoven, The Netherlands.



## SECTION 2

### ADDRESSES OF DUTCH GROUPS WORKING ON RADIATION DOSIMETRY WITH NAMES OF SCIENTISTS IN PARENTHESES.

- AMC Academic Medical Centre, Dept. of Radiotherapy  
Meibergdreef 9, 1105 AZ Amsterdam, phone 020-5669111/4231  
(J.D.P. van Dijk)
- AZL Academic Hospital Leiden, Dept. of Clinical Oncology  
Building 1 KI-P  
Rijnsburgerweg 10, 2333 AA Leiden, phone 071-262914  
(H. de Vroome and J. Davelaar)
- BRO Bronovo Hospital Den Haag  
Bronovolaan 5, 2597 AX Den Haag, phone 070-124081  
(K.S. Wiarda)
- BVI Institute for Radiotherapy and Nuclear Medicine, Bernard  
Verbeeten Institute  
P.O. Box 90120, 5000 LA Tilburg, phone 013-655725  
(P.H. van der Giessen and J. Venselaar)
- DSM DSM Central Laboratory, Dept. IDC  
P.O. Box 18, 6160 MD Geleen, phone 04494-66023  
(D. Bossus, L.G.F.M. Stroeken and J.P.H.M. Severens)
- ECN ECN-Gezondheidsbeschermingsdienst  
P.O. Box 1, 1755 ZG Petten, phone 02246-4226  
(J. Stoute and W.L. Zijp)
- GAK Gemeentelijk Administratie Kantoor, afd. Bedrijfsveiligheid  
P.O. Box 8300, 1005 CA Amsterdam, phone 020-879111  
(B.J. Sponselee)
- HOV Hoechst Holland NV  
P.O. Box 65, 4380 AB Vlissingen, phone 01196-82252  
(J.W. Edel)
- IRI Interuniversitair Reactor Instituut  
Mekelweg 15, 2629 JB Delft, phone 015-781036/786617  
(A.J.J. Bos, C.E. Rasmussen and L.H. Luthjens)
- KLU Koninklijke Luchtmacht, afd. WO/DMKLu  
Binckhorstlaan 135, 2516 BA Den Haag, phone 070-492099  
(J.L. Baak and P. Mourik)

- 5 -

- KUND Catholic University Nijmegen, Radboud Hospital, Dept. of Radiodiagnostics  
Geert Grooteplein Zuid 18, 6525 GA Nijmegen, phone 080-517164/514545  
(M.A.O. Thijssen)
- KUNH Catholic University Nijmegen, Dept. Health Physics  
Toernooiveld 1, 6525 ED Nijmegen, phone 080-558833 ext. 2165  
(L.B. Beentjes)
- KUNN Catholic University Nijmegen, Radboud Hospital, Dept. of Nuclear Medicine  
Prof. v. Ginnikenstraat 8, 6524 RD Nijmegen, phone 080-221286  
(W. Buijs)
- KUNR Catholic University Nijmegen, Radboud Hospital, Dept. of Radiotherapy  
Geert Grooteplein Zuid 18, 6525 GA Nijmegen, phone 080-516825  
(W.F.M. Brouwer, and J.M. van Gasteren)
- MAL Mallinckrodt Diagnostica  
P.O. Box 3, 1755 ZG Petten, phone 02246-7054/7012  
(J.G. van der Baan)
- MBL Medisch Biologisch Laboratorium TNO  
P.O. Box 45, 2280 AA Rijswijk, phone 015-138777  
(P.H.M. Lohman, G.P. van der Schans and L. Roza)
- NIK Nationaal Instituut voor Kernenergie en Hoge-energie Fysica  
P.O. Box 4395, 1009 AJ Amsterdam, phone 020-5922068  
(P.W.F. Louwrier, C.J. Post and G.A. Brinkman)
- NKIN Netherlands Cancer Institute, Dept. of Nuclear Medicine  
Plesmanlaan 121, 1066 CX Amsterdam, phone 020-5122305  
(H.R. Marcuse and J. van der Steen)
- NKIR Netherlands Cancer Institute, Dept. of Radiotherapy  
Plesmanlaan 121, 1066 CX Amsterdam, phone 020-5122127  
(B.J. Mijnheer, H. Meertens and I.A.D. Bruinvis)
- OCD Oncological Center IJsselstreek Deventer  
H.J.P. Fesevurstraat 11, 7415 CM Deventer, phone 05700-22333  
(A. van 't Riet)
- ORG Organon International BV  
P.O. Box 20, 5340 BH Oss, phone 04120-62784  
(J. Wallaart)

- PHI Nederlandse Philips Bedrijven  
Past. Petersstraat 10-15, Eindhoven, phone 040-755115  
(J. Rosendaal and H. Pauw)
- RBI Radiobiological Institute TNO  
P.O. Box 5815, 2280 HV Rijswijk, phone 015-136940, ext. 453  
J.J. Broerse, L.A. Hennen, B. Hogeweg and J. Zoetelief)
- RDA Radiological Service TNO  
P.O. Box 9034, 6800 ES Arnhem, phone 085-569333  
(H.W. Julius and J.G. Ackers)
- RIF Radiotherapeutic Institute Friesland  
Borniastraat 4a, 8934 AD Leeuwarden, phone 058-131317  
(S.J. Feenstra and P. Inia)
- RIVM National Institute of Public Health and Environmental Hygiene  
Laboratorium voor Stralingsonderzoek  
P.O. Box 1, 3720 BA Bilthoven, phone 030-742935  
(A.H.L. Aalbers, K.H. Chadwick, R. van Dongen and H.P. Leenhouts)
- RRTI Rotterdam Radiotherapeutic Institute, Dept. of Physics  
Groene Hilledijk 301, 3075 EA Rotterdam, phone 010-391480  
(A.G. Visser, J.A. van de Poel, H.J. van Kleffens,  
W.M. Star and E. Woudstra)
- RUGN Rijksuniversiteit Groningen, Dept. of Nuclear Medicine,  
University Hospital  
P.O. Box 3001, 9700 RB Groningen, phone 050-613541  
(H. Beekhuis)
- RUGR Rijksuniversiteit Groningen, Dept. of Radiotherapy,  
University Hospital  
P.O. Box 3001, 9700 RB Groningen, phone 050-613674  
(H.H. Kruize and J.H. Welleweerd)
- RUGS Rijksuniversiteit Groningen, Dept. of Safety  
P.O. Box 1102, 9701 BC Groningen, phone 050-635550  
(H. Hekman and G.J. Schutten)
- RULH Rijksuniversiteit Leiden, Dept. of Safety  
Boerhaavelaan 176, 2334 EV Leiden, phone 071-148333 ext.  
5000  
(J. van der Eijnde)
- SHR Shell Ned. Raffinaderijen BV  
P.O. Box 7000, 3000 KA Rotterdam, phone 010-313383  
(B. Roberti)



- SOP Sophia Ziekenhuis  
Dr. van Heesweg 2, 8025 AB Zwolle, phone 038-977444  
(Th. van Deursen)
- THE Technical University Eindhoven, Radiation Protection Service  
P.O. Box 513, 5600 MB Eindhoven, phone 040-473355  
(Chr.J. Huyskens, P. Kicken and J. Hemelaar)
- WEZ Westeinde Hospital  
P.O. Box 432, 2501 CK Den Haag, phone 070-889393  
(C.F. Westermann)
- ZLE Hospital Leyenburg, Dept. of Radiotherapy/Medical Physics  
Leyweg 275, 2545 CH Den Haag, phone 070-298000  
(P.C. van der Pol, L.S. Jonker and J.H. Berkman)

## SECTION 3. COMPILATION OF DOSIMETRY ACTIVITIES

## 3.1 PRINCIPAL APPLICATION

	Environmental	Personnel	Diagnostic (external)	Diagnostic (internal)	Therapy (external)	Therapy (internal)	Reactor	High Dose	Heat	Light
AMC					0	0			0	
AZL					0	0				
BRO				0				0		
BVI		0		0	0	0				
DSM	0							0		
ECN	0	0								
CAK	0	0								0
HOV		0								
IRI		0					0	0		
KLU	0	0						0		
KUND		0	0							
KUNH	0	0	0	0						
KUNN		0		0		0				
KUNR		0			0	0				
MAL		0								
MBL		0								0
NIK	0	0						0		
NKIN				0		0				
NKIR					0	0				
OCD					0	0				
ORG		0								
PHI		0								
RBI	0	0	0	0	0					0
RDA	0	0	0		0					
RIF					0	0				
RIVM	0		0	0	0	0		0		
RRTI		0	0	0	0	0			0	0
RUGN		0		0		0				
RUGS		0	0		0					
RUGT		0			0					
RULH		0								
SHR		0								
SOP					0	0				
THE	0	0								
WEZ		0		0	0	0				
ZLE					0					

3.2 MAIN AREA OF ACTIVITIES

	Modelling	Microdosimetry (research)	Macrodosimetry (research)	Detector development	Special applications	Routine applications
AMC				0	0	
AZL			0			
BRO						
BVI						
DSM						
ECN	0			0	0	0
GAK				0	0	0
HOV					0	0
IRI			0	0	0	0
KLU			0			
KUND			0		0	
KUNH	0		0			
KUNN	0		0			0
KUNR	0		0			
MAL						
MBL		0			0	0
NIK	0		0	0	0	0
NKIN		0			0	0
NKIR	0		0			0
OCD						0
ORG						0
PHI						0
RBI	0	0	0	0	0	0
RDA	0		0	0	0	0
RIF						0
RIVM	0	0	0	0	0	0
RRTI	0					0
RUGN			0			0
RUGS					0	0
RUGT						0
RULH					0	0
SHR					0	0
SOP						0
THE			0	0		0
WEZ	0		0	0	0	0
ZLE						0



3.3 TYPES OF RADIATION EMPLOYED

	$\alpha$	$\beta$	Fast electrons	$\gamma/X$	Neutrons	Mesons	Microwaves	Ultraviolet
AMC			0	0				
AZL		0		0			0	
BRO			0	0				
BVI			0	0	0			
DSM	0	0		0				
ECN	0	0		0	0			
GAK	0	0		0	0			
HOV	0	0		0			0	
IRI	0	0	0	0				
KLU	0	0		0	0			0
KUND				0	0			0
KUNH	0	0		0	0			0
KUNN		0		0	0			0
KUNR			0	0	0			
MAL		0		0	0			
MBL				0	0			
NIK				0	0			0
NKIN	0	0		0	0	0		
NKIR			0	0	0			
OCD			0	0	0			
ORG		0		0	0			
PHI				0	0			
RBI	0	0		0	0			
RDA				0	0			0
RIF			0	0	0			
RIVM	0	0		0	0			
RRTI			0	0				
RUGN		0		0	0			
RUGS			0	0	0			
RUGT			0	0	0			
RULH		0		0				
SHR		0		0				
SOP			0	0				
THE		0		0	0			
WEZ	0	0	0	0	0			
ZLE			0	0				0

## 3.4 DOSIMETRY TECHNIQUES

## Ionization chambers

	General	Nuclear Enterprises	Physikalisch Technische Werkstätte	Victoreen	Nardeux	Far West Technology	Exradin	LND	Capintec
AMC		0	0						
AZL	0	0	0						
BRO	0								
BVI		0		0					
DSM									
ECN	0				0	0		0	
GAK									
HOV									
IRI	0	0	0		0				
KLU									
KUND									0
KUNH		0							
KUNN									
KUNR		0	0						
MAL									
MBL									
NIK	0								
NKIN									
NKIR	0	0	0				0		
OCD		0	0						
ORG									
PHI									
RBI	0	0	0			0	0		
RDA	0		0	0					0
RIF			0						
RIVM	0	0	0						
RRTI		0	0						
RUGN	0		0						
RUGS		0	0						
RUGT	0								
RULH	0								
SHR									
SOP	0								
THE	0								
WEZ	0	0	0						
ZLE		0							

## 3.4 DOSIMETRY TECHNIQUES

	TLD					GM - proportional counters	Scintillation detectors	Chemical dosimetry	Semiconductors
	General	Therados	MBLE		Harshaw				
AMC					0	0	0		0
AZL						0	0		0
BRO									
BVI					0		0		0
DSM									
ECN					0	0	0		0
GAK						0	0		0
HOV						0	0		0
IRI	0				0	0	0	0	0
KLU						0	0	0	0
KUND					0	0			0
KUNH					0	0	0		0
KUNN						0	0		0
KUNR		0				0			0
MAL			0						
MBL						0		0	
NIK									
NKIN						0	0		
NKIR					0	0			0
OCD						0	0		0
ORG							0		
PHI					0	0			
RBI					0	0			
RDA	0				0	0	0		0
RIF					0	0			
RIVM	0				0	0	0		0
RRTI	0						0	0	0
RUGN	0					0	0		
RUCS					0				
RUGT	0					0			
RULH									
SHR						0	0		
SOP									
THE					0	0	0		
WEZ						0			0
ZLE						0	0	0	0

3.4 DOSIMETRY TECHNIQUES

	Track detectors	Photographic film	Calorimetry	Activation and fission detectors	Neutron rem counters	Thermometry	Bolometry
AMC						0	
AZL		0					
BRO							
BVI							
DSM							
ECN	0	0			0		
GAK						0	
HOV							
IRI				0	0		
KLU		0					
KUND		0					
KUNH					0		
KUNN							
KUNR		0					
MAL		0					
MBL							0
NIK				0			
NKIN		0					
NKIR		0		0	0		
OCD		0					
ORG							
PHI							
RBI				0	0		
RDA		0					
RIF							
RIVM			0		0		
RRTI		0					
RUGN							
RUGS							
RUGT							
RULH							
SHR		0					
SOP							
THE		0					
WEZ		0			0		
ZLE							

## Dosimetry publications AZL

1. Vroome, H. de and Noordijk, E.M.  
Technique and dosimetry of total body irradiation at Leiden.  
J. Eur. Radiother. 3 (1982) 215-216.

## Dosimetry publications IRI

1. Tempelaar, P. Passchier, W.F.  
Results of the IRI-participation in the European Comparison Programme of integrating dosimeter systems for environmental monitoring (TLD), Report IRI 190-79-03 (1979).
2. Passchier, W.F.  
The determination of the concentration of radon daughters in air from the activity of a particular air sample. Report IRI 190-79-04 (1979).
3. Passchier, W.F.  
Theoretical basis for the determination of radon decay products in air from the activity of a particular air sample. Report IRI 190-83-07 (1983).
4. Passchier, W.F.  
The RADITE computer program, an ALGOL-60 program for the computation of radon decay product concentrations in air. Report IRI 190-83-08 (1983).
5. Passchier, W.F.  
Case studies of radon decay product exposure in buildings. Report IRI 190-83-11 (1983).
6. Passchier, W.F.  
Model computations of radon and radon decay product concentrations in an open system; the Hewlett-Packard 41C program RNSS. Report IRI 190-83-12 (1983).
7. Wijngaarden, M.H. van, Plaisier, J., Bos, A.J.J.  
A microprocessor controlled thermoluminescence reader for routine use and research. Rad. Prot. Dosim. 11 (1985) 179-183.
8. Bruin, M. de, Bos, A.J.J., Hoogenboom, J.E.  
In vivo neutronen-activeringsanalyse in de nier; dosimetrische aspecten en optimalisering. Report IRI 133-86-04 (1986).
9. Bos, A.J.J., Dielhof, J.B., De Vries, W., Rasmussen, C.E.  
Relative sensitivity of thermoluminescent materials to 15 MeV neutrons; new experimental data with respect to glow curve and encapsulating material. XIIIth Regional Congress of IRPA, Salzburg (1986).



# Dosimetry publications KUNH

1. Beentjes, L.B. et al.  
Advies inzake "Nota Milieuhygiënische normen 1976".  
Uitgebracht door een commissie uit de Gezondheidsraad.  
Rijswijk, (1978).
2. Beentjes, L.B., Scholte, P.J.L., Wielen, A.W. van der, Kal, H.B.  
Stralingshygiënische beperkingen in de radiotherapie van  
benigne aandoeningen. Symposium TH Enschede,  
"Stralingshygiëne in de Radiologie". Enschede (1978) 147-161.
3. Bont, A.H., Beentjes, L.B.  
Calculated MPC values for  $^{239}\text{PuO}_2$  by comparing the added  
risk of cancer with the accepted occupational risk. Health  
Physics 36 (1979) 53-58.
4. Bont, A.H., Beentjes, L.B.  
Recente veranderingen in de eenheden welke gebruikt worden  
in de stralingshygiëne. Para Medica 9 (1979) 16-18.
5. Beentjes, L.B., Wielen, A.W. van der, Kal, H.B.  
Risk evaluation of diagnostic X-ray examinations of the chest.  
Diagnostic Imaging 48 (1979) 336-344.
6. Beentjes, L.B., Broerse, J.J., Kogel, A.J. van der,  
Wielen, A.W. van der.  
Age dependence of the risk of radiation-induced fatal  
malignancies. Health Physics 38 (1980) 239-241.
7. Kal, H.B., Beentjes, L.B.  
Lage stralingsdoses en het risico van kankerinductie. Kanker,  
4e jaargang, 2 (1980) 19-22.
8. Beentjes, L.B. et al.  
Advies inzake "De betekenis van het UNSCEAR-rapport 1977  
voor het stralingshygiëne beleid in Nederland. Uitgebracht  
door een commissie uit de Gezondheidsraad. 's-Gravenhage  
(1980).
9. Beentjes, L.B.  
Application of the dose limitation system for radiation  
protection. Practical Implications Vol. 1. International Atomic  
Energy Agency, Vienna (1979). Book review. Uitgebracht  
door Diagnostic Imaging 6 (1980).
10. Beentjes, L.B.  
Hoe weet men welke stralingsdosis is opgelopen? De Veiligheid  
57, 7/8 (1981).
11. Beentjes, L.B. et al.  
Advies inzake "Notitie Intentieprogramma Milieuhygiënische  
Normen 1979". Uitgebracht door een commissie uit de  
Gezondheidsraad. 's-Gravenhage (1981).
12. Beentjes, L.B., Broerse, J.J.  
Doses from diagnostic radiology in the Netherlands:  
Implications for population dose. Radiation Protection, EUR  
7438 (1981) 87-100.
13. Beentjes, L.B.  
Afschermingsberekeningen. Berichten uit de Vereniging 82/2,  
36 (1982).

14. Beentjes, L.B. et al.  
Advies inzake "Megavolttherapie met Lineaire Versnellers, Betatrons e.d.". Uitgebracht door een commissie uit de Gezondheidsraad. 's-Gravenhage (1982).
15. Beentjes, L.B.  
Stralingsrisico, somatische effectieve dosis en 'stralingsdure' onderzoeken. Risico en doelmatigheid in de röntgendiagnostiek. Symposium 1984 Commissie Stralingshygiëne van de Nederlandse Vereniging voor Radiodiagnostiek (1984) 8-20.
16. Duijsings, J.H., Beentjes, L.B.  
Inwendige  $^3\text{H}$  besmetting bij radiologische werkers aan universiteiten. NVS-Nieuws 2 (1984) 11-16.
17. Beentjes, L.B.  
Universiteit van Nijmegen. Categorie-indeling van personen die beroepshalve aan straling worden blootgesteld. IRPA-NVS 4 (1984) 12-14.
18. Beentjes, L.B.  
Internal contamination of radiological workers by tritium compounds at two universities in the Netherlands. Health Physics 46 (1984) 665-669.
19. Beentjes, L.B., Glas, J.A.  
An estimate of the somatically effective dose from diagnostic radiology in the Netherlands during 1976-1980. Health Physics 47 (1984) 299-304.

#### Dosimetry publications KUNN

1. Yap, S., Hafkenscheid, J., Goossens, C., Buijs, W., Binkhorst, R., Van Tongeren, J.  
Estimation of radiation dosage and transmutation effect of  $^{14}\text{C}$  involved in measuring rate of albumin synthesis with  $^{14}\text{C}$ -Carbonate. Journal of Nuclear Medicine 16 (1975) 642.
2. Buijs, W., Beentjes, L., Corstens, F.  
Long-term retention of  $^{207}\text{Bi}$  in the human body after injection of  $^{206}\text{Bi}$ . Accepted for publication in Health Physics (feb. 1985).

#### Dosimetry publications MBL

1. Schans, G.P. van der, Centen, H.B., Lohman, P.H.M.  
DNA lesions induced by ionizing radiation. In: Progress in Mutation Research, Vol. 4 (eds. A.T. Natarajan et al.) Elsevier Biomedical Press (1982) 285-299.
2. Schans, G.P. van der, Centen, H.B., Lohman, P.H.M.  
The induction of UV-type damage by  $^{60}\text{Co}$   $\gamma$ -rays in human fibroblasts. In: Proc. Int. Congress. Rad. Res. (eds. J.J. Broerse, G.W. Barendsen, H.B. Kal, A.J. van der Kogel) Martinus Nijhoff Publ. Amsterdam (1983) B2-34.
3. Baan, R.A., Lohman, P.H.M., Zaalberg, O.B., Schoen, M.A., Fichtinger-Schepman, A.M.J., Schutte, H.H., Schans, G.P. van der.  
Future tools in biomonitoring. In: Carcinogens and mutagens in the environment, Vol. IV: The Workplace, CRC Press, Inc. (1983) in press.
4. Roza, L., Schans, G.P. van der, Lohman, P.H.M.  
The induction and repair of DNA damage and its influence on cell death in primary human fibroblasts exposed to UV-A or UV-C irradiation. Submitted to DNA Repair Reports of Mutation Research (1984)



#### Dosimetry publications NIK

1. Jung, D.W.G.  
IJking van  $\text{BF}_3$  neutronen tellerbuizen voor latere dosismetingen rond de MEA versneller, NIKHEF afdelingsrapport V.D.3 (1981).
2. Visser, J. and Brinkman, G.A.  
Threshold detectors as monitors for bremsstrahlung beams. Int. J. Appl. Radiat. Isotopes 32 (1981) 113-115.
3. Brinkman, G.A.  
Dose rates during isotope production. Int. J. Appl. Radiat. and Isotopes 33 (1982) 109-115.

#### Dosimetry publications NKIN

1. Marcuse, H.R., Delprat, C.C., Delemarre, J.F.M., Hoefnagel, C.A., Maessen, H., Schoot, J.B. van der.  
Is a comparison of I-131 treatment results by the delivered radiation dose practicable? In: Third International radio-pharmaceutical dosimetry symposium, Oak Ridge, October 1980, FDA 81-8166 (1980) 595-601.
2. Delprat, C.C., Hoefnagel, C.A., Maessen, H., Marcuse, H.R.  
Retrospective blood radiation dose estimation following therapy with I-131 in thyroid carcinoma. In: Advances in thyroid neoplasia, M. Andreoli et al. Field Educational Italia (1981) 301-306.
3. Marcuse, H.R., Delprat, C.C., Hoefnagel, C.A., Jongsma, A.P.M., Maessen, H.  
Radiopharmaceutical dosimetry in I-131 treatment of differentiated thyroid carcinoma. In: Proc. of the Third European Symposium on Radiopharmacology. (ed. P.H. Cox). Martinus Nijhoff Publishers (1982) 87-96.
4. Marcuse, H.R., Bakker-Tervoort, M.A., Hoefnagel, C.A.  
Pitfalls in Radiation Dosimetry. Poster Abstract p161, in: Eur. J. Nuclear Medicine (1983) A47.
5. Steen, J. van der, Maessen, H.J.M., Hoefnagel, C.A., Marcuse, H.R.  
Radiation protection during therapy with unsealed sources at young children. To be published in Health Physics (1985).



#### Dosimetry publications NKIR

1. Laarse, R. van der, Bruinvis, I.A.D. and Farid Nooman, M.  
Wall-scattering effects in electron beam collimation. *Acta Radiol. Onc.* 17 (1978) 113-124.
2. Mijnheer, B.J., Visser, P.A. and Wieberdink, Tj.  
Clinical neutron dosimetry at the Amsterdam fast neutron therapy facility. *Proc. Third. Symp. on Neutron Dosimetry in Biology and Medicine*, (CEC, Luxembourg), EUR 5848 (1978) 203-225.
3. Mijnheer, B.J., Zoetelief, J. and Broerse J.J.  
Build-up and depth dose characteristics of different fast neutron beams relevant for radiotherapy. *Brit. J. Radiol.* 51 (1978) 122-126.
4. Zoetelief, J., Broerse, J.J. and Mijnheer, B.J.  
Characteristics of ionization chambers and GM counters employed for mixed field dosimetry. *Proc. Third. Symp. on Neutron Dosimetry in Biology and Medicine* (CEC, Luxembourg), EUR 5848 (1978) 565-578.
5. Bruinvis, I.A.D.  
Physical aspects of electron therapy up to 20 MeV. *Medica Mundi* 24 (1979) 119-126.
6. Broerse, J.J., Mijnheer, B.J., Eenmaa, J. and Wootton, P.  
Dosimetry intercomparisons and protocols for therapeutic applications of fast neutron beams. *Suppl. Eur. J. Cancer* (1979) 117-123.
7. Mijnheer, B.J. and Broerse, J.J.  
Dose distributions of clinical fast neutron beams. *Suppl. Eur. J. Cancer* (1979) 109-115.
8. Zoetelief, J., Engels, A.C., Broerse, J.J., Mijnheer, B.J. and Visser, P.A.  
Effective measuring point for in-phantom measurements with ion chambers of different sizes. *Suppl. Eur. J. Cancer* (1979) 169-170.
9. Laarse, R. van der  
Optimization of Treatment Planning by a Batch-Processed Computer Program. In: *Fundamentals in Technical Progress*, Luik, Vol. II (1979) 2.1-2.14.
10. Laarse, R. van der, Giesen, P.H. van der and Kleffens, H.J. van  
Survey on the state of Arts on the Use of Computers in Radiation Therapy in the Netherlands. In: *Computers in Radiation Therapy. Proc. of the Seventh International Conference on the Use of Computers in Radiation Therapy*, Tokyo (1980) 433-434.
11. Laarse, R. van der  
Optimization of External Beam Treatment Plans Using Score Functions. In: *Computers in Radiation Therapy. Proc. of the Seventh International Conference on the Use of Computers in Radiation Therapy*, Tokyo (1980) 150-156.

12. Mijnheer, B.J., Visser, P.A., Lewis, V.E., Guldbakke, S., Lesiecki, H., Zoetelief, J. and Broerse, J.J.  
The relative neutron sensitivity of Geiger-Müller counters. Suppl. Eur. J. Cancer (1979) 162-163.
13. Mijnheer, B.J.  
The relative neutron sensitivity,  $k_U$ , for non-hydrogenous detectors. Proc. Workshop on Ion Chambers for Neutron Dosimetry (Harwood Academic Publications), EUR 6782 (1980) 307-320.
14. Williams, J.R., Broerse, J.J., Mijnheer, B.J. and Parnell, C.J.  
Experience with ionization chambers by the European Clinical Neutron Dosimetry Group (ECNEU). Proc. Workshop on Ion Chambers for Neutron Dosimetry (Harwood Academic Publications), EUR 6782 (1980) 107-112.
15. Mijnheer, B.J.  
Interpretation and corrections of TE-ion chamber measurements for neutron dosimetry. Proc. Workshop on Ion Chambers for Neutron Dosimetry (Harwood Academic Publications), EUR 6782 (1980) 91-95.
16. Mijnheer, B.J.  
Influence of the tube length at the gas exhaust port on the reading of a TE ion chamber flushed with TE gas. Proc. Workshop on Ion Chambers for Neutron Dosimetry (Harwood Academic Publications), EUR 6782 (1980) 125-126.
17. Mijnheer, B.J.  
Summary of discussions on ion chamber characteristics and minimum operational requirements. Proc. Workshop on Ion Chambers for Neutron Dosimetry (Harwood Academic Publications), EUR 6782 (1980) 127-130.
18. Zoetelief, J., Engels, A.C., Broerse, J.J. and Mijnheer, B.J.  
Effective measuring position of ion-chambers for neutron dosimetry. Proc. Workshop on Ion Chambers for Neutron Dosimetry (Harwood Academic Publications), EUR 6782 (1980) 269-280.
19. Zoetelief, J., Engels, A.C., Broerse, J.J. and Mijnheer, B.J.  
Effect of finite size of ion chambers used for neutron dosimetry. Phys. Med. Biol. 25 (1980) 1121-1131.
20. Laarse, R. van der  
The Selectron Treatment Planning System. In: Computers in Radiation Therapy. Proc. of the Seventh International Conference on the Use of Computers in Radiation Therapy, Tokyo (1980) 187-195.
21. Laarse, R. van der  
Microprocessor System for Tracking Isodensity Lines in Film Dosimetry. Acta Radiol. Onc. 19 (1980) 405-409.
22. Laarse, R. van der  
Computerized Radiation Treatment Planning. Thesis, Amsterdam (1981).



23. Mijnheer, B.J., Battermann, J.J. and Laarse, R. van der  
Treatment planning at the Amsterdam d+T fast neutron  
therapy facility. Proc. Int. Workshop on Treatment Planning  
for External Beam Therapy with Neutrons. Suppl.  
Strahlentherapie 77 (1981) 102-110.
24. Broerse, J.J., Mijnheer, B.J. and Williams, J.R.  
European protocol for neutron dosimetry for external beam  
therapy. Brit. J. Radiol. 54 (1981) 882-898.
25. Williams, J.R., Mijnheer, B.J., Rassow, J., Meissner, P. and  
Hensley, F.  
A small-scale neutron dosimetry intercomparison between  
Essen, Amsterdam and Edinburgh. Strahlentherapie 157 (1981)  
245-250.
26. Williams, J.R. and Mijnheer, B.J.  
Survey of determination of dose distributions, influence of  
oblique incidence, tissue composition and wedge filters. Proc.  
Int. Workshop on Treatment Planning for External Beam  
Therapy with Neutrons. Suppl. Strahlentherapie 77 (1981)  
93-101.
27. Mijnheer, B.J., Williams, J.R. and Broerse, J.J.  
Standardization of neutron dosimetry procedures for external  
beam therapy. Proc. Int. Symposium on Biomedical Dosimetry:  
Physical Aspects, Instrumentation, Calibration. (IAEA,  
Vienna) (1981) 329-339.
28. Mijnheer, B.J., Wieberdink, Tj. and Battermann, J.J.  
In vivo dosimetry in the pelvis during fast neutron therapy.  
Brit. J. Radiol. 54 (1981) 56-60.
29. Mijnheer, B.J. and Williams, J.R.  
Determination of absorbed dose and kerma in a neutron field  
from measurements with a tissue-equivalent ionisation  
chamber. Phys. Med. Biol. 26 (1981) 57-69.
30. Mijnheer, B.J., Haringa, H., Nolthenius, H.J. and Zijp, W.L.  
Neutron spectra and neutron kerma derived from activation  
and fission detector measurements in a d+T neutron therapy  
beam. Phys. Med. Biol. 26 (1981) 641-655.  
Also as: (Stichting Energie Onderzoek Centrum Nederland,  
Petten) ECN Report 81-005 (1981).
31. McDonald, J.C., Chang Ma, I., Mijnheer, B.J. and Zoetelief, J.  
Calorimetric and ionimetric dosimetry intercomparisons, II d+T  
neutron source at the Antoni van Leeuwenhoek Hospital.  
Medical Physics 8 (1981) 44-48.
32. Mijnheer, B.J., Wijk, P.C. van, Zoetelief, J. and Broerse, J.J.  
Determination of absorbed dose with two types of clinically  
employed tissue equivalent ionization chambers in fast neutron  
beams. Proc. Fourth Symp. on Neutron Dosimetry (CEC,  
Luxembourg), EUR 7448 (1981) 361-372.
33. Mijnheer, B.J.  
Neutron spectra and neutron kerma derived from activation  
and fission detector measurements in a d+T neutron therapy  
beam. Proc. Fourth Symp. on Neutron Dosimetry (CEC,  
Luxembourg), EUR 7448 (1981) 209-218.

34. Broerse, J.J. and Mijnheer, B.J.  
Progress in neutron dosimetry for biomedical applications: Chapter I in: Progress in Medical Radiation Physics (Plenum Publishing Corporation, New York), Vol. I (1982) 1-101.
35. Mijnheer, B.J., Guldbakke, S., Lewis, V.E. and Broerse, J.J.  
Comparison of the fast-neutron sensitivity of a Geiger-Müller counter using different techniques. *Phys. Med. Biol.* 27 (1982) 91-96.
36. Octave-Prignot, M., Pihet, P., Vynckier, S., Wambersie, A., Meulders, J.P., Zoetelief, J., Broerse, J.J., Mijnheer, B.J. and Wijk, P.C. van.  
Neutron dosimetry intercomparison between Louvain-la-Neuve, Rijswijk and Amsterdam. *Strahlentherapie* 158 (1982) 227-229.
37. Broerse, J.J. and Mijnheer, B.J.  
Accuracy and precision of absorbed dose measurements for neutron therapy. *Int. J. Rad. Onc. Biol. Phys.* 8 (1982) 2049-2056.
38. Mijnheer, B.J.  
Summary of the discussion on 'Delivery of dose to the patient (including beam monitoring)'. Workshop on Total Body Irradiation. *J. Eur. de Radioth.* 3 (1982) 257-258.
39. Mijnheer, B.J.  
Biofysische aspecten van neutrontherapie. *Berichten uit de Vereniging voor Klinische Fysica* (1982) 28-39.
40. Mijnheer, B.J., Wijk, P.C. van, Williams, J.R. and Bell, K.  
The influence of air humidity on gamma-ray calibration and neutron absorbed dose measurements with different types of A-150 plastic tissue-equivalent ionisation chambers. *Phys. Med. Biol.* 28 (1983) 277-284.
41. Mijnheer, B.J.  
Calculation of the variation in the relative biological effectiveness of collimated 14 MeV neutrons at different positions in a phantom. *Proc. Eight Symposium on Microdosimetry, Jülich 1982 (CEC, Luxembourg), EUR 8395* (1983) 885-896.
42. Mijnheer, B.J. and Williams, J.R.  
Calibration procedures of tissue-equivalent ionization chambers used in neutron dosimetry. In: *Advances in dosimetry for fast neutrons and heavy charged particles for therapy applications. IAEA Technical Report Series (International Atomic Energy Agency, Vienna)* (1984) 127-139.
43. Mijnheer, B.J., Rassow, J. and Williams, J.R.  
A neutron treatment planning intercomparison. *Proc. 7th International Congress of Radiation Research, Amsterdam, July 3-8, 1983 - Tumour biology and therapy: session D, (Martinus Nijhoff, Boston etc.)* (1983) D4-19.
44. Bruinvis, I.A.D., Amstel, A. van, Elevelt, A.J. and Laarse, R. van der  
Calculation of electron beam dose distributions for arbitrarily shaped fields. *Phys. Med. Biol.* 28 (1983) 667-683.



45. Bruinvis, I.A.D., Amstel, A. van, Elevelt, A.J. and Laarse, R. van der  
Dose calculations for arbitrarily shaped electron beams. *Acta Radiol. Oncol. Suppl.* 364: Computed electron beam dose planning (1983) 73-80.
46. Bruinvis, I.A.D., Laarse, R. van der, Mathol, W.A.F. and Nooman, M.F.  
An electron beam dose planning method for arbitrary field shapes. *Proc. 8th International Conference on the Use of Computers in Radiation Therapy*, Toronto, Canada, July 9-12, 1984. J.R. Cunningham, D. Ragan, J. van Dijk (eds.) (Los Angeles, IEEE Computer Society) (1984) 152-156.
47. Bruinvis, I.A.D.  
Dose calculations for arbitrarily shaped electron beams. *Proc. of a course 'Methods of computing dose distributions in patients from external electron beams'*, Uema, Sweden, March 28-31, 1984. A.E. Nahum (ed) (Uema, University of Uema) (1984).
48. Laarse, R. van der and Meertens, H.  
An algorithm for ovoid shielding of a cervix applicator. *Proc. 8th International Conference on the Use of Computers in Radiation Therapy*, Toronto, Canada, July 9-12, 1984. J.R. Cunningham, D. Ragan and J. van Dijk (eds.) (Los Angeles, IEEE Computer Society) (1984) 365-369.
49. Laarse, R. van der, Overbeek, P.A.M. van and Strackee, J.  
Wedge filters for megavoltage roentgen ray beams. *Acta Radiologica Oncology* 23 (1984) fasc. 6, 477-484.
50. Vynckier, S., Rassow, J. and Mijnheer, B.J.  
A comparison of attenuation properties of neutron beams in water and other tissue equivalent liquids. *Strahlentherapie* 160 (1984) 120-122.
51. Mijnheer, B.J., Rassow, J. and Williams, J.R.  
A neutron-photon treatment planning intercomparison. *Strahlentherapie* 160 (1984) 122-123.
52. Mijnheer, B.J. and Visser, P.A.  
Comparison of the fast neutron sensitivity of a Geiger-Müller counter using different lead filtration methods. *Strahlentherapie* 160 (1984) 124-125.
53. Westermann, C.F., Mijnheer, B.J. and Kleffens, H.J. van  
Determination of the accuracy of different computer planning systems for treatment with external photon beams. *Radiotherapy and Oncology* 1 (1984) 339-347.
54. Kleffens, H.J. van and Mijnheer, B.J.  
Determination of the accuracy of the tissue inhomogeneity correction in some computer planning systems for megavoltage photon beams. *Proc. 8th International Conference on the Use of Computers in Radiation Therapy*, Toronto, Canada, July 9-12, (1984) 45-49.

55. Westermann, C.F. and Mijnheer, B.J.  
Dose correction for oblique incidence of megavoltage photon beams. Proc. 8th International Conference on the Use of Computers in Radiation Therapy, Toronto, Canada, July 9-12 (1984) 195-205.
56. Mijnheer, B.J., Williams, J.R. and Broerse, J.J.  
Standardization of dosimetry for fast neutron therapy. J. Eur. de Radiother. 5 (1984) 195-205.
57. Meertens, H. and Laarse, R. van der  
Screens in ovoids of a Selectron cervix applicator. Radiotherapy and Oncology 3 (1985) 69-80.
58. Bruinvis, I.A.D., Heukelom, S. and Mijnheer, B.J.  
Comparison of ionization measurements in water and polystyrene for electron beam dosimetry. Phys. Med. Biol. 30 (1985) 1043-1053.
59. Mijnheer, B.J., Rassow, J., Williams, J.R., Battermann, J.J. and Wambersie, A.  
A neutron-photon treatment planning intercomparison. Radiotherapy and Oncology 3 (1985) 151-164.
60. Mijnheer, B.J., Vynckier, S. and Burger, G.  
An intercomparison of the treatment planning system used for neutron beams in Europe. Proc. Fifth Symposium on Neutron Dosimetry, Neuherberg, September 17-21 (1984) 1131-1142.
61. Vynckier, S., Mijnheer, B.J. and Rassow, J.R.  
Total absorbed dose variations in different phantom materials of different beam qualities. Proc. Fifth Symposium on Neutron Dosimetry, Neuherberg, September 17-21 (1984) 1067-1072.
62. Mijnheer, B.J.  
Variations in response to radiation of a nylon-walled ionization chamber induced by humidity changes. Med. Phys. 12 (1985) 625-626.
63. Mijnheer, B.J. and Williams, J.R.  
Some comments on dry air or humid air values for physical parameters used in the AAPM protocol for photon and electron dosimetry. Med. Phys. 12 (1985) 656-658.
64. Dutreix, A., Mijnheer, B. and Svensson, H.  
Proceedings Symposium on New Protocols for the Dosimetry of High-Energy Photon and Electron Beams. Introduction. Radiother. and Oncol. 4 (1985) 289-294.
65. Mijnheer, B.J.  
Summary of the discussion on the practical use and comparison of new protocols for the dosimetry of high-energy photon and electron beams. Radiother. and Oncol. 4 (1985) 325-328.
66. Meertens, H.  
Digital processing of high energy photon beams images. Med. Phys. 12 (1985) 111-113.
67. Meertens, H.  
A liquid ionization detector for digital radiography of therapeutic megavoltage beams. Phys. Med. Biol. 30 (1985) 313-321.



68. Mijnheer, B.J. and Wittkämper, F.W.  
Comparison of recent codes for practice for high-energy photon dosimetry. *Phys. Med. Biol.* **31** (in press).
69. Mijnheer, B.J.  
Protocols for the determination of absorbed dose in a patient irradiated by beams of nuclear particles in radiotherapy procedures. In: *Nuclear and atomic data for radiotherapy and related radiobiology*. IAEA Technical Report Series (International Atomic Energy Agency, Vienna), (in press).

#### Dosimetry publications RBI

1. Broerse, J.J.  
CENDOS - a coordinated program on collection and evaluation of neutron dosimetry data. In: Proc. 3rd Symp. on Neutron Dosimetry in Biology and Medicine. Neuherberg, 23-27 May, 1977 (eds. G. Burger and H.G. Ebert). Luxembourg, Commission of the European Communities (1978) 107-112.
2. Schraube, H., Burger, G., Zoetelief, J., Broerse, J.J.  
Experimental arrangements, monitoring results and normalization procedures for the European Neutron Dosimetry Intercomparison Project (ENDIP). Ibid, (1978) 875-898.
3. Broerse, J.J., Burger, G., Coppola, M.  
Evaluation of Results of the European Dosimetry Intercomparison Project (ENDIP). Ibid (1978) 899-915.
4. Zoetelief, J., Broerse, J.J., Mijnheer, B.J.  
Characteristics of ionization chambers and GM counters employed for mixed field dosimetry. Ibid (1978) 565-578.
5. Puite, K.J., Zoetelief, J.  
The application of lyoluminescence in fast neutron fields. Ibid (1978) 727-735.
6. Broerse, J.J., Burger, G., Coppola, M., Schraube, H., Zoetelief, J.  
Evaluation of results of the European Neutron Dosimetry Intercomparison Project (ENDIP). Ibid (1978) 888-915.
7. Mijnheer, B.J., Zoetelief, J., Broerse, J.J.  
Build-up and depth-dose characteristics of different fast neutron beams relevant for radiotherapy. Brit. J. Radiol. 51 (1978) 122-126.
8. Broerse, J.J., Greene, D., Lawson, R.C., Mijnheer, B.J.  
Operational characteristics of two types of sealed-tube fast-neutron radiotherapy installations. Int. J. Radiat. Oncol. Biol. Phys. 3 (1977), 361-265.
9. Broerse, J.J., Zoetelief, J.  
Dosimetric aspects of fast neutron irradiations of cells cultured in monolayer. Int. J. Radiat. Biol. 33 (1978) 383-385.
10. Broerse, J.J., Burger, G., Coppola, M.  
A European Neutron dosimetry intercomparison project (ENDIP), results and evaluation (eds. J.J. Broerse, G. Burger and M. Coppola). Luxembourg, Commission of the European Communities, 1978.
11. Caswell, R.S., Bewley, D.K., Broerse, J.J., Geiger, K.W., Goodman, L.J., Müller, J.W.  
An international neutron dosimetry intercomparison. Washington, International Commission on Radiation Units and Measurements, 1978, ICRU, report 27.



12. Broerse, J.J., Burger, G., Coppola, M.  
Implications of dosimetry intercomparisons for standardization in neutron dosimetry for biological and medical applications. In: National and International standardization of radiation dosimetry. Proc. Int. Symp. Atlanta, Georgia, USA, 5-9 December, 1977. Vienna, IAEA (1978) 291-303.
13. Zoetelief, J., Broerse, J.J., Puite, K.J.  
The need for repeated intercomparisons and standardization of X-ray dosimetry for the coordination of late-effects research in Europe. *Ibid*, 305-317.
14. Broerse, J.J., Zoetelief, J., Puite, K.J.  
Dosimetry intercomparisons for evaluation of late effects of ionizing radiation. *Acta Radiol. Oncol.* 17 (1978) 225-234.
15. Hogeweg, B. Zoetelief, J., Broerse, J.J.  
RBE for cell survival at different positions in collimated neutron beams in relation to difference in linear energy spectra. In: Proc. 6th Symp. on Microdosimetry, Brussels 22-26 May, 1978. (eds. J. Booz and H.G. Ebert) London, Harwood, (1978) 507-516.
16. Zoetelief, J., Hogeweg, B., Broerse, J.J.  
Radiation quality and absorbed dose at different positions in the primary beam and around the shielding of a neutron generator. *Ibid*, 615-627.
17. Broerse, J.J.  
Applications of microdosimetry to radiation therapy. *Ibid*. 629-638.
18. Zoetelief, J., Engels, A.C., Bouts, C.J., Broerse, J.J.  
Experimental arrangement and monitoring results at TNO. In: A European Neutron Dosimetry Intercomparison Project (ENDIP) (eds. J.J. Broerse, G. Burger and M. Coppola). EUR 6004, Commission of the European Communities, Luxembourg (1978) 32-43.
19. Broerse, J.J.  
Neutron dosimetry intercomparisons: evaluation and implications for future developments. In: Radiation Research: Proc. 6th Int. Congr. of Radiation Research, Tokyo, May 1979. (eds. S. Okada, M. Imamura, T. Terhima and H. Yamaguchi), Tokyo, Jap. Ass. for Rad. Res. (1979) 182-191.
20. Broerse, J.J., Zoetelief, J., Burger, G., Schraube, H., Ricourt, A.  
A small scale neutron dosimetry intercomparison Cooperative European Research Project on Collection and Evaluation of Neutron Dosimetry Data (CENDOS 79-2). Luxembourg, Commission of the European Communities (1979) EUR 6557.
21. Broerse, J.J., Mijnheer, B.J., Eenma, J., Wootton, P.  
Dosimetry intercomparisons and protocols for therapeutic applications of fast neutron beams. In: High-LET radiations in clinical radiotherapy. *Eur. J. Cancer, Supplement* (1979) 117-123.

22. Hogeweg, B., Zoetelief, J., Broerse, J.J.  
RBE of collimated neutron beams at various positions in a phantom in relation to differences in lineal energy spectra. In: High-LET radiations in clinical radiotherapy. Eur. J. Cancer, Supplement (1979) 157-158.
23. Mijneer, B.J., Visser, P.A., Lewis, V.E., Guldbakke, S., Lesiecki, H., Broerse, J.J.  
The relative neutron sensitivity of Geiger-Müller counters. In: High-LET radiations in clinical radiotherapy. Eur. J. Cancer, Supplement (1979) 162-163.
24. Zoetelief, J., Engels, A.C., Broerse, J.J., Mijneer, B.J., Visser, P.A.  
Effective measuring point for in-phantom measurements with ion chambers of different sizes. High-LET radiations in clinical radiotherapy. Eur. J. Cancer, Supplement (197) 169-170.
25. Beentjes, L.B., Broerse, J.J., Kogel, A.J. van der, Wielen, A. van der.  
Age dependence of the risk of radiation induced fatal malignancies. Health Physics 38 (1980) 239-241.
26. Puite, K.J., Agrawal, M.S., Broerse, J.J., Zoetelief, J.  
Dosimetry intercomparison of partial body X-radiation of rats. Phys. Med. Biol. 25 (1980) 13-24.
27. Zoetelief, J., Engels, A.C., Broerse, J.J.  
Effective measuring point of ion chambers for photon dosimetry in phantoms. Brit. J. Radiol. 53 (1980) 580-583.
28. Broerse, J.J.  
Dosimetry of neutrons. In: Thomas, R.H. and V. Perez-Mendez (eds).: Advances in radiation protection and dosimetry in medicine. Advances in Radiation Protection Dosimetry in Medicine, Erice, 16-25 September, 1979. New York, Plenum Press, (1980) 395-413.
29. Broerse, J.J.  
Ion chambers for neutron dosimetry. Commission of the European Communities, Harwood Academic Publishers, Chur, Switzerland, 1980.
30. Broerse, J.J.  
Summary of discussions of results of dosimetry intercomparisons and ion chambers characteristics. In: J.J. Broerse (ed): Ion chambers for neutrons dosimetry. Chur, Harwood Academic Publishers (for the Commission of the European Communities) (1980) 47-50.
31. Schraube, H., Zoetelief, J.J., Broerse, J.J., Burger, G.  
Performance tests of four different tissue-equivalent ionization chambers. In: J.J. Broerse (ed): Ion chambers for neutron dosimetry. Chur, Harwood Publishers (for the Commission of the European Communities) (1980) 131-149.



32. Williams, J.R., Broerse, J.J., Mijnheer, B.J., Parnell, C.J.  
Experience with ionization chambers by the European Clinical Neutron Dosimetry Group (ECNEU). In: J.J. Broerse (ed.): Ion chambers for neutron dosimetry. Chur, Harwood Publishers (for the Commission of the European Communities) (1980) 107-111.
33. Zoetelief, J., Engels, A.C., Broerse, J.J.  
Characteristics of spherical tissue equivalent ion chamber constructed at TNO. In: J.J. Broerse (ed.): Ion chambers for neutron dosimetry. Chur, Harwood Publishers (for the Commission of the European Communities) (1980) 73-79.
34. Zoetelief, J., Engels, A.C., Broerse, J.J.  
Effective measuring position of ion chambers for neutron dosimetry. In: J.J. Broerse (ed.): Ion chambers for neutron dosimetry. Chur, Harwood Academic Publishers (for the Commission of the European Communities) (1980) 269-279.
35. Zoetelief, J., Engels, A.C., Broerse, J.J., Mijnheer, B.J.  
Effect of finite size of ion chambers used for neutron dosimetry. *Phys. Med. Biol.* 25 (1980) 1121-1131.
36. Beentjes, L.B., Broerse, J.J.  
Doses from diagnostic radiology in the Netherlands: implications for population dose. In: Drexler, G., H. Eriskat and H. Schibilla (eds.): Proc. "Patient exposure to radiation in medical X-ray diagnosis"; Possibilities for dose reduction. Munich-Neuherberg 27-30 April, 1981 (1981) 87-100.
37. Zoetelief, J.  
Summary of discussion on ion chamber tests, application of cavity theory and measurement of small currents. In: Ion chambers for neutron dosimetry (ed. J.J. Broerse). EUR 6782, Harwood Academic Publishers (for the Commission of the European Communities) (1980) 181-184.
38. Broerse, J.J.  
Future steps to reduce patient dose in X-ray diagnosis. In: Drexler, G., H. Eriskat and H. Schibilla (eds.): Proc. "Patient exposure to radiation in medical X-ray diagnosis"; Possibilities for dose reduction. Munich-Neuherberg 27-30 April, 1981 (1981) 443-445.
39. Broerse, J.J., Mijnheer, B.J., Williams, J.R.  
European protocol for neutron dosimetry for external beam therapy. *Brit. J. Radiol.* 54 (1981) 882-898.
40. Mijnheer, B.J., Wijk, P.C. van, Zoetelief, J., Broerse, J.J.  
Determination of absorbed dose with two types of clinically employed tissue equivalent ionization chambers in fast neutron beams. In: Burger, G., and H.G. Ebert (eds.): Proc. 4th Symp. on Neutron Dosimetry; II Beam Dosimetry. Munich-Neuherberg, 15 June 1981. Luxembourg, Commission of the European Communities (1981) 361-372.



41. Mijnheer, B.J., Williams, J.R., Broerse, J.J.  
Standardization of neutron dosimetry procedures for external beam therapy. In: Biomedical dosimetry: physical aspects, instrumentation, calibration. Proc. Int. Symp. on biomedical dosimetry: physical aspects, instrumentation, calibration. International Atomic Energy Agency and the World Health Organization, Paris, 27-31 October 1980. Vienna, International Atomic Energy Agency (1981) 329-339.
42. Zoetelief, J., Engels, A.C., Broerse, J.J.  
Displacement corrections for spherical ion chambers in phantoms irradiated with neutrons and photon beams. In: Biomedical dosimetry: physical aspects, instrumentation, calibration. International Atomic Energy Agency and The World Health Organization, Paris, 27-31 October 1980. Vienna, International Atomic Energy Agency (1981) 125-138.
43. Zoetelief, J., Engels, A.C., Broerse, J.J.  
Displacement correction factors for spherical ion chambers in phantoms irradiated with neutrons of different energies. *Phys. Med. Biol.* 26 (1981) 513-514.
44. Zoetelief, J.J., Engels, A.C., Bouts, C.J., Hennen, L.A., Broerse, J.J.  
Response of tissue-equivalent chambers as a function of gas pressure. In: Burger, G. and H.G. Ebert (eds.): Proc. 4th Symp. on Neutron Dosimetry; II. Beam dosimetry. Munich-Neuherberg, 1-5 June 1981. Luxembourg, Commission of the European Communities (1981) 315-326.
45. Burger, G., Breit, A., Broerse, J.J. (eds.)  
Treatment planning for external beam therapy with neutrons. Workshop in Munich, 18-19 September, 1980. Institut für Strahlentherapie und radiologische Onkologie of the Technical University Munich, Institut für Strahlenschutz of the Gesellschaft für Strahlen- und Umweltforschung mbH Munich and the European Clinical Neutron Dosimetry Group. München, Urban and Schwarzenberg, 1981.
46. Janssen, L.A.M., Broerse, J.J.  
Te verwachten uitworp van radio-actieve stoffen en daaruit voortvloeiende belasting voor omwonenden bij een kolengestookte centrale van 600 MW(e). Rapport Nijverheidsorganisatie TNO, Apeldoorn 1981.
47. Zoetelief, J.  
Dosimetry and biological effects of fast neutrons: cell inactivation and chromosome aberrations in relation to radiation quality. Thesis, University of Amsterdam (1980).
48. Broerse, J.J., Mijnheer, B.J.  
Progress in neutron dosimetry for biomedical applications. In: C.G. Orton (ed.): Progress in medical radiation physics. Vol. 1. New York, Plenum Press (1982). p. 1-101.
49. Broerse, J.J., Mijnheer, B.J.  
Accuracy and precision of absorbed dose measurements for neutron therapy. *Int. J. Radiat. Oncol. Biol. Phys.* 8 (1982) 2049-2056.



50. Broerse, J.J., Dutreix, A.  
Physical aspects of total body irradiation. *J. Eur. Radiother.* 3 (1982) 157-264.
51. Octave-Prignot, M., Pihet, P., Vynkier, S., Wambersie, A.,  
Meulders, J.P., Zoetelief, J., Broerse, J.J., Mijnheer, B.J.  
and Wijk, P.C. van.  
Neutron dosimetry intercomparison between Louvain-la-Neuve,  
Rijswijk and Amsterdam. *Strahlentherapie* 158 (1982) 227-229.
52. Goodman, L.J., Coyne, J.J., Zoetelief, J., Broerse, J.J.,  
McDonald, J.C.  
Dosimetry of a lightly encapsulated  $^{252}\text{Cf}$  source. *Radiat.*  
*Prot. Dosimetry* 4 (1983) 91-96.
53. Zoetelief, J., Engels, A.C., Hennen, L.A., Bouts, C.J.,  
Broerse, J.J.  
Characteristics of a high pressure ionization chamber with  
different filling gases in beams of neutrons and  $^{137}\text{Cs}$  gamma  
rays. In: *Proceedings of the 7th International Congress of  
Radiation Research*, Amsterdam, 38 July, 1983. E2-40 (eds.  
J.J. Broerse, G.W. Barendsen, H.B. Kal and A.J. van der  
Kogel), Martinus Nijhoff Publishers (1983).
54. Zoetelief, J., Broerse, J.J.  
Dosimetry with tissue-equivalent ionization chambers in fast  
neutron fields for biomedical applications. *Phys. Med. Biol.* 28  
(1983) 503-520.
55. Broerse, J.J. and Zoetelief, J.  
Characteristics of fast neutron dosimetry systems for  
exposure to high dose levels. In: *Proc. Nato working group  
meeting on the assessment of injury from ionizing radiation in  
warfare* (1983) 479-499.
56. Broerse, J.J., Zoetelief, J.  
Determination of absorbed dose and radiation quality with  
tissue-equivalent (TE) ionization chambers. In: *Advances in  
dosimetry for fast neutrons and heavy charged particles for  
therapy applications. Proc. of an Advisory Group meeting,  
International Atomic Energy Agency, Vienna, 14-18 June 1982*  
(1984) 29-51.
57. Zoetelief, J., Hennen, L.A., Broerse, J.J.  
Some practical aspects of dosimetry and dose specification for  
whole body irradiation. In: *Response of Different Species to  
Total Body Irradiation* (J.J. Broerse and T.J. MacVittie,  
eds.). Martinus Nijhoff Publishers (1984) 3-28.
58. Hogeweg, B., Bosnjakovic, B.F.M., Willart, W.M.A.J.  
Radiation aspects of indoor environments and related  
radioecological problems: a study of the situation in the  
Netherlands. *Radiat. Prot. Dosimetry* 7 (1984) 327-331.
59. Zuur, C., Zoetelief, J., Visser, A.G., Broerse, J.J.  
Absorbed dose from mammography. *Brit. J. Radiol. Suppl.* 18  
(1985) 110-114.

60. Zuur, C., Broerse, J.J.  
Risk- and Cost-Benefit Analysis of breast Screening Programs Derived from Absorbed Dose Measurements in the Netherlands. *Diagn. Imaging* 54 (1985) 211-222.
61. Zoetelief, J., Davies, R.W., Scarpa, G., Hofmeester, G.H., Dixon-Brown, A., Kogel, A.J. van der, Broerse, J.J.  
Protocol for X-ray dosimetry and exposure arrangements employed in studies of late somatic effects in mammals. *Int. J. Radiat. Biol.* 47 (1985) 81-102.
62. Zoetelief, J., Davies, R.W., Broerse, J.J. (eds.)  
EULEP protocol for X-ray dosimetry. Report EUR 9507. Commission of the European Communities (1985).
63. Broerse, J.J., Lyman, J.T., Zoetelief, J.  
Dosimetry of external beams of nuclear particles. In: *The Dosimetry of Ionizing Radiation*. Eds. K.R. Kase, B.E. Bjarngard and F.H. Attix. Academic Press, 229-290 (1985).
64. Reuling, F., Hogeweg, B., Broerse, J.J.  
Voorstudie voor de inventarisatie van de stralingsdosis waaraan de Nederlandse bevolking is blootgesteld. RBI rapport 85/3479 (1985).
65. Zoetelief, J., Engels, A.C., Bouts, C.J., Broerse, J.J., Hennen, L.A.  
Characteristics of high-pressure ionization chambers with several filling gases in neutron and photon fields. In: *Proc. of the fifth Symposium on Neutron Dosimetry* (CEC, Luxembourg), EUR 9762 (1985) 705-715.
66. Rassow, J., Broerse, J.J., Duehr, R., Hensley, F.W., Marquebreucq, S., Olthoff Muentner, K., Pradhan, A.S., Temme, A., Vynckier, A., Zoetelief, J.  
Spectral dependence of response coefficients and applicability of the two-peak TLD method in mixed neutron-photon radiation fields. In: *Proc. of the fifth Symposium on Neutron Dosimetry* (CEC, Luxembourg), EUR 9762 (1985) 783-794.
67. Zoetelief, J., Schraube, H.  
Experimental procedures for the on-site neutron dosimetry intercomparison ENDIP-2. In: *Proc. of the fifth Symposium on Neutron Dosimetry* (CEC, Luxembourg), EUR 9762 (1985) 1179-1190.
68. Broerse, J.J. and Zoetelief, J.  
Practical aspects of nuclear particle dosimetry. In: *Nuclear and atomic data for radiotherapy and related radiobiology*. IAEA Technical Report Series (International Atomic Energy Agency, Vienna), (in press).
69. Coyne, J.J., Gerstenberg, H.M. and Hennen, L.A.  
Secondary charged particle spectra and kerma calculations. In: *Nuclear and atomic data for radiotherapy and related radiobiology*. IAEA Technical Report Series (International Atomic Energy Agency, Vienna), (in press).



70. Zoetelief, J., Schlegel-Bickmann, D., Schraube, H. and Dietze, G. Characteristics of Mg/Ar ionization chambers used as gamma-ray dosimeters in mixed neutron-photon fields. Phys. Med. Biol. (in press).

#### Dosimetry publications RDA

1. Julius, H.W.  
Individuele controle op beroepshalve ontvangen stralingsdoses  
TNO project 12 (1978).
2. Julius, H.W., Huyskens, Chr.J.  
Het gewicht van de sievert als eenheid en een beschouwing  
over zijn dimensies. NVS-Nieuws 3 (1979).
3. Busuoli, G., Civolani, O., Lembo, L., Paganelli, M., Julius, H.W.  
Confronto di sorgenti di Co.60 mediante rivelatori TL. XXI  
Nat. Cong. Italiana di protezione contre le radiazioni, Palermo  
(1979).
4. Julius, H.W.  
Whole-body counter intercomparison pilot study.
5. Planque, G. de, Julius, H.W., Verhoef, C.W.  
Effects of storage intervals on the sensitivity and fading of  
LiF TLD's (Toulouse). Nucl. Inst. Meth. 175 (1980) 177-179.
6. Julius, H.W., Busuoli, G.  
An extremity dosimeter system based on TLD (Toulouse).  
Nucl. Inst. Meth. 175 (1980) 153-155.
7. Julius, H.W.  
Het TNO TLD-systeem voor individuele stralingscontrole  
(erkenningaanvraag).
8. Ackers, J.G.  
Parameters die de bevolkingsdosis uit natuurlijke  
radioactiviteit beïnvloeden.
9. Julius, H.W.  
Vaarwel filmbadge, welkom TLD. Gamma (1983).
10. Julius, H.W., Planque, G. de  
Influence of annealing and readout procedures on fading, and  
sensitivity changes in LiF for temperatures and humidities  
typical for environmental and personnel dosimetry. Voordracht  
7th Int. Conf. on Solid State Dosimetry, Ottawa, Canada  
(1983).
11. Ackers, J.G., Bosnjakovic, B.F.M., Strackee, L.  
Limitation of radioactivity concentrations in building materials  
based on a practical calculation model. Voordracht Int. Sem.  
on Indoor Exposure to Natural Radiation and Related Risk  
Assessment, Capri, Italië (1983).
12. Ackers, J.G.  
Direct measurement of radon exhalation from surfaces.  
Voordracht Capri, Rad. Prot. Dos., Vol. 7, no. 1-4, 199-201.
13. Julius, H.W., Zoetelief, J.  
Tussentijds verslag van de werkzaamheden m.b.t. het  
Beleidsruimteproject nr. 210: "Beperking stralenbelasting van  
de patiënt t.g.v. röntgendiagnostisch onderzoek". Sept. '84 -  
Juli '84.



#### Dosimetry publications RIVM

1. Broerse, J.J., Zoetelief, J. and Puite, K.J.  
Dosimetry intercomparisons for evaluation of late effects of ionizing radiation. *Acta Radiologica Oncology* 17 (1978) 225-234.
2. Chadwick, K.H., Rintjema, D. and Ten Broeke, W.R.R.  
The accuracy of the calibration curve of the clear perspex dosimeter. *Food Preservation by Irradiation*, Vol. II (IAEA, Vienna), SM-221 (1978) 327-334.
3. Puite, K.J. and Crebolder, D.L.J.M.  
Experience with X-ray dose intercomparison projects: measurement of beam quality and absorbed dose using a two-phosphor system; energy independent systems based on luoluminescence intercomparison. *Procedures in the Dosimetry of Photon Radiation*, Technicap Report Series No. 182 (IAEA, Vienna) (1978) 71-76, 123-135, 147-151.
4. Puite, K.J., Rintjema, D. and Crebolder, D.L.J.M.  
High dose level dosimetry using the lyoluminescence technique. In: *Proc. Int. Symp. of Food Preservation by Irradiation* (IAEA, Vienna) Vol. 2 (1978) 335-343.
5. Puite, K.J. and Zoetelief, J.  
The application of lyoluminescence in fast neutron fields. *Proc. 3rd Symp. on Neutron Dosimetry in Biology and Medicine*. Eds. G. Burger and H. Ebert, EUR 5848, Brussels (1978) 727-735.
6. Zoetelief, J., Broerse, J.J. and Puite, K.J.  
The need for repeated intercomparisons and standardization of X-ray dosimetry for the coordination of late effects research in Europe. *Proc. Int. Symp. on National and International Standardization of Radiation Dosimetry*, Vienna (1978) 305-317.
7. Chadwick, K.H.  
Radiation measurements and quality control. *Proc. 2nd Int. Cong. on Radiation Processing*, Miami. *Radiat. Phys. Chem.* 14 (1979) 203.
8. Hofmeester, G.H.  
Discussions in the Consultative Committee on Standards for the Measurements of Ionizing Radiations on SI and its influence on Radiological Quantities. RIV-rapport, Bilthoven (1979)
9. Niatel, M.T. and Hofmeester, G.H.  
Comparison of BIPM and RIV absorbed dose standards CCEMRI (1) (1979) 79-23.
10. Hofmeester, G.H.  
Progress Report 1977-1979 CCEMRI (1) (1979) 79-22.
11. Chadwick, K.H.  
Some observations on the results of the preliminary inter-comparison held in 1977. IAEA Advisory Group on High Dose Standardization and Intercomparison. Vienna, Techn. Tep. Series (1980).

12. Puite, K.J.  
A lyoluminescence dosimetry system useful for high-dose intercomparison studied. Nucl. Inst. Meth., 175 (1980) 122-125.
13. Puite, K.J., Agrawal, M.S., Broerse, J.J. and Zoetelief, J.  
Dosimetry intercomparison for partial body X-irradiation of rats. Phys. Med. Biol. 25 (1980) 13-24.
14. Hofmeester, G.H.  
Progress Report 1979-1981 RIV CCEMRI (1) (1981) 81-19.
15. Hofmeester, G.H.  
Calorimetric determination of absorbed dose in water for 1-25 MeV X-rays. In: Biomedical Dosimetry physical aspects, instrumentation, calibration. Proc. Symp. IAEA/WHO, Paris, France (1980), IAEA-SM249/56 (1981) 235.
16. Aalbers, A.H.L.  
Comments on the voltage ripple of the Philips MG 320 constant potential X-ray generator CCEMRI (1) (1983) 83-20.
17. Chadwick, K.H.  
International dose-assurance in radiation technology. IAEA Bulletin 24, no. 3 (1982) 21-27.
18. Ettinger, K.V. and Puite, K.J.  
Lyoluminescence dosimetry. Part I. Principles. Int. J. Appl. Radiat. Isot. 33 (1982) 1139-1158.
19. Puite, K.J. and Ettinger, K.V.  
Lyoluminescence dosimetry. Part II. State-of-the-art. Int. J. Appl. Radiat. Isot. 33 (1982) 1159-1170.
20. Chadwick, K.H.  
The effect of humidity on the response of Hx dosimetry perspex to radiation. IAEA Coordinated Res. Meet. High Dose Standardization and Intercomparison (IAEA, Vienna) (1983).
21. Hofmeester, G.H., Dijk, E. van and Aalbers, A.H.L.  
Use of ionization chambers in the determination of absorbed dose distribution in mammography. In: Proc. 7th Int. Congr. Radiat. Res., Ed. by J.J. Broerse et al., Nijhoff, Amsterdam (1983) E2-18.
22. Hofmeester, G.H. and Aalbers, A.H.L.  
Progress report physical dosimetry: 1981-1983. CCEMRI (1) (1983) 83-17.
23. Hofmeester, G.H.  
Monte Carlo calculations to determine the photon energy distribution in a water phantom (work in progress) CCEMRI (1) (1983) 83-24.
24. Hofmeester, G.H.  
An international comparison of dosimetry installations for radiation protection purposes. CCEMRI (1) (1983) 83-24.
25. Miller, A., Chadwick, K.H. and Nam, J.W.  
Dose Assurance in Radiation Processing Plants. Radiat. Phys. Chem. (1983) 22. 31-40.



26. Hofmeester, G.H.  
Intercomparison of dosimetry installations (RIV, CNEN, CEA). Protection level exposure standards. In: Photon dosimetry - Fourth Information Seminar on the Radiation protection dosimeter intercomparison programme. Bilthoven, 25-27 October 1982. EUR 9192, (CEC, Luxembourg) (1984) 195-221.
27. Hofmeester, G.H. and Aalbers, A.H.L.  
Summary backscatter studies and calculations. In: Photon dosimetry - Fourth Information Seminar on the Radiation protection dosimeter intercomparison programme. Bilthoven, 25-27 October 1982. EUR 9192, (CEC, Luxembourg) (1984) 166-167.
28. Hofmeester, G.H. and Dijk, E. van.  
Determination of some backscatter factors. In: Photon dosimetry - Fourth Information Seminar on the Radiation protection dosimeter intercomparison programme. Bilthoven, 25-27 October 1982. EUR 9192, (CEC, Luxembourg) (1984) 150-165.
29. Hofmeester, G.H., Swart, A. and Dijk, E. van  
Pilot study for the intercomparison programme for photon personal dosimeters, 1980-1982. In: Photon dosimetry - Fourth Information Seminar on the Radiation protection dosimeter intercomparison programme. Bilthoven, 25-27 October 1982. EUR 9192, (CEC, Luxembourg) (1984) 115-131.
30. Aalbers, A.H.L. and Dijk, E. van  
Preliminary measurements of kilovoltage and voltage ripple of a constant potential X-ray generator. In: Photon dosimetry - Fourth Information Seminar on the Radiation protection dosimeter intercomparison programme. Bilthoven, 25-27 October 1982. EUR 9192, (CEC, Luxembourg) (1984) 222-229.
31. Zoetelief, J., Davies, R.W., Scarpa, G., Hofmeester, G.H.H., Dixon-Brown, A., Kogel, A.J. van der and Broerse, J.J.  
Protocol for X-ray dosimetry and exposure arrangements employed in studies of late somatic effects in mammals. *Int. J. Radiat. Biol.* 47 (1985) 81-102.
32. Aalbers, A.H.L.  
The Protection Level Gamma Ray Facility at the RIVM. CCEMRI (1) (1985) 85-17.
33. Aalbers, A.H.L.  
Progress Report, 1983-1985, on Radiation Sources, Standards and related topics at the RIVM. CCEMRI (1) (1985) 85-7.
34. Thierens, H., Poffijn, A., De Bisschop, H. Segaert, O., Aalbers, A.H.L., Swart, A. and Van Dijk, E.  
A comparison of the medium free-air chamber of the Standard dosimetry Laboratory of the university of Gent with the exposure standards of the National Institute of Public Health and Environmental Hygiene in Bilthoven. *Annalen voor de Belgische Vereniging voor Stralingsbescherming* 10 (1985) 501-514.

35. Chadwick, K.H. and Oosterheert, W.F.

Dosimetry concepts and measurements in Food Irradiation Processing. Appl. Radiat. Isto. 37 (1986) 47-52.

# Dosimetry publications RRTI

1. Somerwil, A., Kleffens, H.J. van.  
Experience with the Alderson Rando Phantom. Br. J. Radiology, 50 (1977) 295-296.
2. Kleffens, H.J. van, Star, W.M.  
Application of Stereo X-ray Photogrammetry in the determination of absorbed dose values during intracavitary radiation therapy. Int. J. Rad. Onc. Biol. Phys. 5 (1979) 557-565.
3. Storchi, P.R.M., Kleffens, H.J. van.  
Evaluation of cartesian coordinates and radiation doses in points determined with stereo X-ray techniques. Computer programs in Biomedicine 9 (1979) 141-148.
4. Kleffens, H.J. van.  
Stereoröntgenfotogrammetrie. Gamma 30, 12 (1980) 251-253.
5. Kuipers, Tj.  
Stereo X-ray photogrammetry applied for prevention of sigmoid-colon damage caused by radiation from intrauterine sources. Int. J. Rad. Onc. Biol. Phys 8 (1982) 1011-1017.
6. Poel, J.A. v.d., Eijkenboom, W.H.  
General information, set-up and dosimetry of total body irradiation at Rotterdam. J. Eur. Radiother. 3 (1982) 220-221.
7. Zuur, C., Zoetelief, J., Visser, A.G., Broerse, J.J.  
Comparison of absorbed doses due to mammography in different Dutch hospitals. Proc. of the World Congress on Medical Physics and Biomedical Engineering. Hamburg (1982) paper 19-26.
8. Kuipers, Tj., Subandono Tjokrowardojo, A.J.S., Visser, A.G.  
Dosimetry in high-dose-rate brachytherapy. Book of Abstracts, ESTRO, Bordeaux (1983) 17.
9. Leije, B.A. v.d., Kleffens, H.J. van.  
SIRAD: a program for automatic dosimetry and data transfer for radiotherapy planning. Computer programs in Biomedicine 17 (1983) 243-248.
10. Westermann, C.F., Mijnheer, B.J., Kleffens, H.J. van.  
Determination of the accuracy of different computer planning systems for treatment with external photon beams. Radioth. and Oncology 1 (1984) 339-447.
11. Kleffens, H.J. van, Jacobs, F.W., Linden, P.M. v.d., Venselaar, J., Thieme, R.  
Investigations of the accuracy of calculations for irregularly shaped photon beams. Proc. 8th Int. Conf. on the use of computers in radiation therapy. IEEE Computer Society Press (1984) 41-44.
12. Kleffens, H.J. van, Mijnheer, B.J.  
Determination of the tissue inhomogeneity correction in some computer planning systems for megavoltage photon beams. Proc. 8th Int. Conf. on the use of computers in radiation therapy. IEEE Computer Society Press (1984) 45-49.



13. Zuur, C., Zoetelief, J., Visser, A.G., Broerse, J.J.  
Absorbed dose for mammography in several Dutch hospitals. Br. J.  
Radiology suppl. 18 (1985) 110-114.

#### Dosimetry publications RUGN

1. Beekhuis, H. and Piers, D.A.  
Radiation risk of thyroid scintigraphy in newborns. Eur. J. Nucl. Med. 8 (1983) 348-350.
2. Beekhuis, H. and Nieweg, O.E.  
Radiation absorbed doses from Co-57 and Co-55 bleomycin. J. Nucl. Med. 25 (1984) 478-485.

#### Dosimetry publications THE

1. Jacobs, G.J.H.  
De multisphère methode, een neutronendetectiemethode, geschikt voor spectrometrie en dosimetrie. Afstudeerverslag THE (1979).
2. Kicken, P.J.H., Huyskens, Chr.J.  
Een geautomatiseerd thermoluminescentie dosimetrie (TLD) systeem. NVS-Nieuws (1979).
3. Huyskens, Chr.J., Kicken, P.J.H.  
A microcomputer controlled thermoluminescence dosimetry system. Proc. 5th Congress IRPA, Jerusalem (1980).
4. Huyskens, Chr.J., Jacobs, G.J.H.  
Calibration and application of the multisphère technique in neutron spectrometry and dosimetry. Proc. 5th Congress IRPA, Jerusalem (1980).
5. Mulders, J.J.L., Witsenboer, A.J.  
Stralingsveiligheid en dosimetrie. Addendum bij afstudeerverslag "De produktie van  $^{81}\text{Rb}/^{81}\text{Kr}$ -generatoren aan de THE voor toepassing in de nucleaire geneeskunde". (1981).
6. Doremalen, P.A.P.M. van  
De produktie van  $^{52}\text{Fe}$  met het cyclotron van de THE voor toepassing in de nucleaire geneeskunde. Afstudeerverslag THE (1981).