



si2021.eu

Slovensko predsedovanje Svetu Evropske Unije

The Slovenian Presidency of the Council of the European Union

Vse avtorske pravice so pridržane.
Te PPT predstavitve ni dovoljeno
razmnoževati ali razpošiljati v kakršnikoli
obliki brez predhodnega pisnega
dovoljenja avtorja.

All rights reserved.
This PPT presentation may not be
reproduced or distributed in any form
without the prior written permission of the
author.

Protection of Hospital Workers from the Occupational Risks Related to Carcinogens

Cankarjev dom Congress and Cultural Centre Ljubljana
3 September 2021, Ljubljana/Slovenia

Carcinogens in hospitals in Portugal: a Multidisciplinary Risk Assessment

Jorge Barroso Dias, President of SPMT (Portuguese Society of Occupational Medicine)



Jorge Barroso Dias

- President of SPMT (Portuguese Society of Occupational Medicine)
- Faculty at the **Faculty of Medicine of the University of Lisbon**
- Faculty and Member of the Coordinating Committee of the Social Medicine Courses of the Institute of Health Sciences / **Portuguese Catholic University**
- Coordinator of the SPMT Work Commission "*Alcohol, Tobacco and other addictive behaviors*" and "***Professional Diseases and other work-related illnesses***"
- Master in Health Management with specialization in Clinical Management
- Specialist Physician in Occupational Medicine / and Senior Occupational Safety and Hygiene Technician
- Former member of the Board of the College of Occupational Medicine Specialty of the Portuguese Medical Association (2012-2015)
- Former Member of the School Council (2013-2016) and Pedagogical Council (2016-2017) of the National School of Public Health (ENSP / NOVA University)
- Co-author of Occupational Health Guidelines:
- **Co-author of Clinical Guidelines:**
 - DGS Clinical Guidelines ("Early detection of harmful drinking"; "Approaches to teenager's acute intoxication" and "Diagnosis of multi-consumptions in teenagers")
 - Guideline # 1 - Health Surveillance of Workers Exposed to Ionizing Radiation";
 - **Guideline # 2 – Health surveillance of workers exposed to Carcinogenic, Mutagenic and Reproductive toxic chemicals (CMR) "**
 - Guideline # 3 Surveillance health of workers exposed to psychosocial risk factors in the workplace

Carcinogens in hospitals in Portugal: a Multidisciplinary Risk Assessment

Jorge Barroso Dias

Usage restrictions:

“All rights reserved. This PowerPoint presentation may not be reproduced or distributed in any form or modified without the prior written permission of the author and the Ministry of Labour, Family, Social Affairs and Equal Opportunities of the Republic of Slovenia.”

Special thanks to SPMT members, ENSP Faculties, ACT, DGS/National Occupational Health Program, and all colleagues, who directly or indirectly contributed to this work and to the protection of health professionals exposed to carcinogens in Portugal:

Afonso Vale, Alexandra Suspiro, Élia Amaral, Ema Sacadura Leite, Emília Telo, Gary Morales, Isabel Antunes, Isabel Serra, José Rocha Nogueira, João Raposo, Paula Rosa, Rodrigo Costa Lobo, Sandra Moreira, Susana Viegas, Tiago Barros, Tiago Oliveira

Conflict of interests

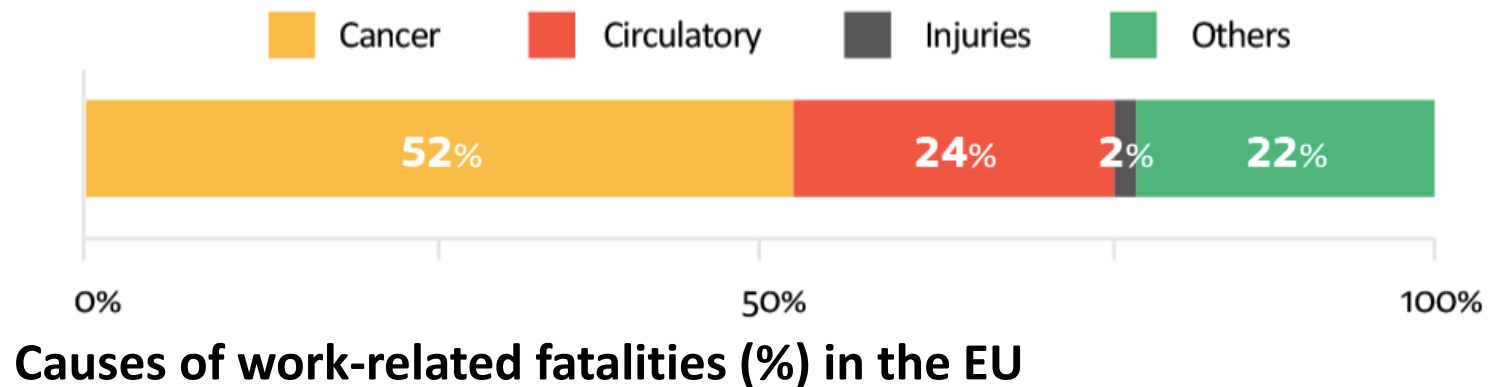
No conflict of interests



EU strategic framework on health and safety at work 2021-2027 Occupational safety and health in a changing world of work

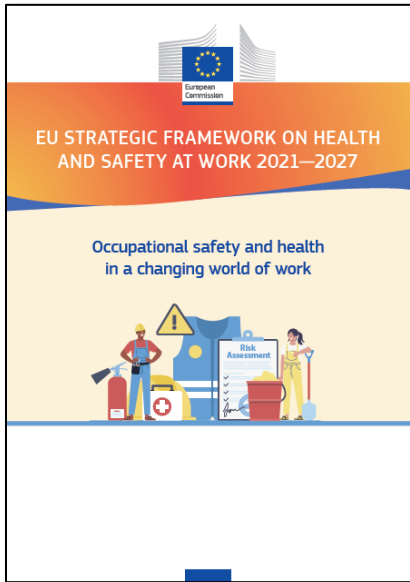


- >> **Cancer is the leading cause** of work-related deaths in the EU;
- >> Carcinogens contribute to an estimated 100 000 occupational cancer deaths in the workplace every year;
- >> addressing **occupational circulatory diseases** (Heart disease or stroke), **the second-largest cause of work-related deaths**



Source: "An international comparison of the cost of work-related accidents and illnesses", EU-OSHA 2017

EU strategic framework on health and safety at work 2021-2027 Occupational safety and health in a changing world of work

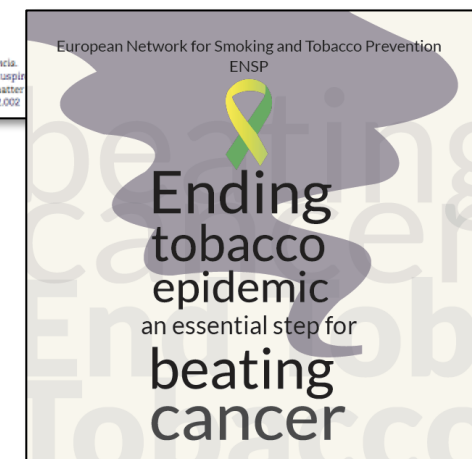
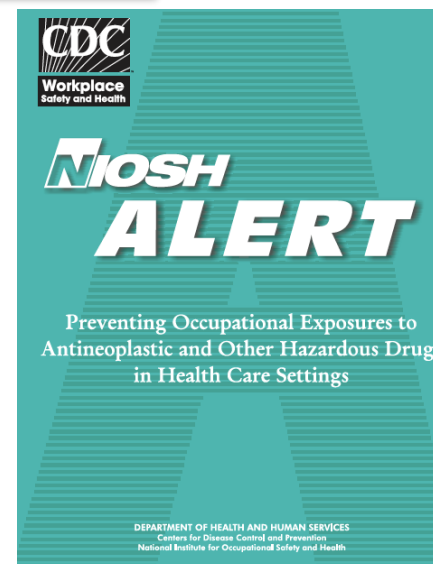
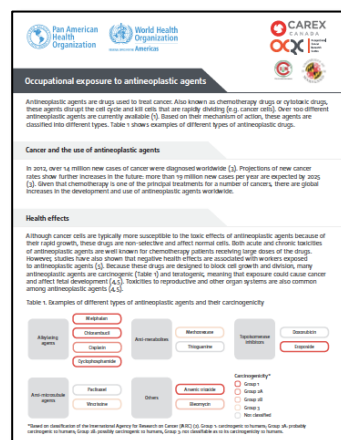
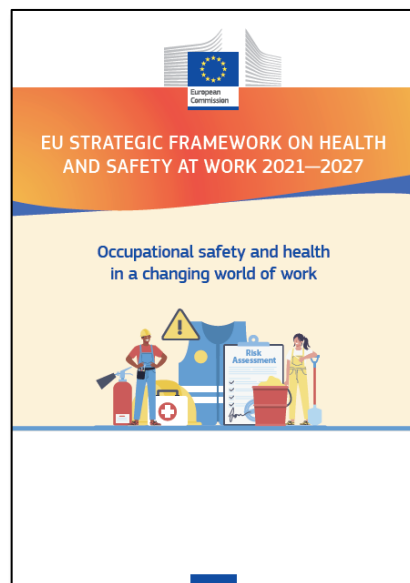
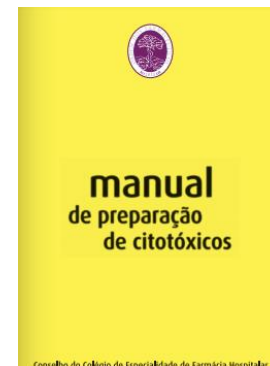
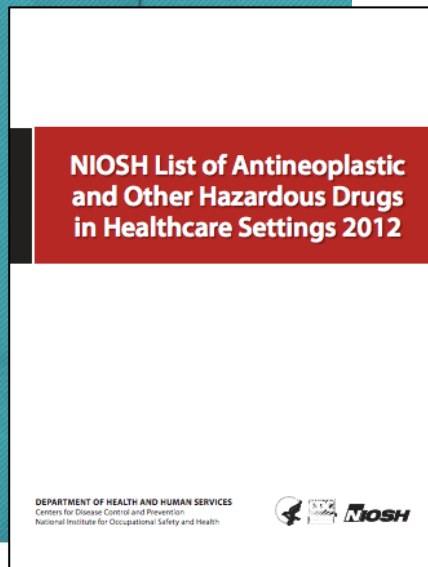


>> [...] addressing occupational circulatory diseases, such as **heart disease** or **stroke**.

>>>> Although circulatory diseases are the second-largest cause of work-related deaths in the EU ... little is known about their links to work-related risks.

>>> Further research and data collection as well as health promotion at work both at EU and national level should be a priority.





GUIA TÉCNICO N.º 2

VIGILÂNCIA DA SAÚDE DOS TRABALHADORES
EXPOSTOS A AGENTES QUÍMICOS
CANCERÍGENOS, MUTAGÊNICOS OU TÓXICOS
PARA A REPRODUÇÃO

Portugal - Occupational exposure to CMR – Multidisciplinary Risk Assessment

Occupational Medicine proposes individual adjustment to safety Risk Assessment

DGS **Saúde Ocupacional**

Indicar o equipamento de proteção individual do trabalhador: _____
→ Foi cumprimento do equipamento de proteção individual previsto na FDS? ☐ Sim ☐ Não ☐

Indicar principais medidas de emergência existentes: _____
→ Foi cumprimento de todas as medidas de emergência previstas na FDS? ☐ Sim ☐ Não ☐

Consultar a Ficha de Segurança (FDS) do produto (Parte A) e a Ficha de Informação de Segurança (FIS) do produto (Parte B). O Médico do Trabalho tem em conta a informação registada pela FDS/FIS.

2.3. Estimativa da concentração do fator de risco profissional e do estado de saúde do trabalhador – Ponto 4.2.4 do Guia

Parte A. A preencher pelo TST/TSST

A.2.3.1. Foi realizada avaliação ambiental: ☐ Sim ☐ Não ☐

Justificar "Não":
☐ Contexto de exposição profissional "baixo" (de acordo com o ponto 7 do Guia Técnico de 2018)
☐ Avaliação ambiental não realizada em ☐ dias/mes
Outra (qual)? _____

A.2.3.2. Avaliação (seis) efetuada:

Parâmetro avaliado	Fator de risco de exposição profissional	Fator de risco de estado de saúde	Fator de risco de estado de saúde	Fator de risco de estado de saúde	Fator de risco de estado de saúde
	Alto	Médio	Alto	Médio	Alto
	(Verde)	(Amarelo)	(Laranja)	(Verde)	(Vermelho)

A.2.3.3. Graduação do nível de exposição profissional (ver Ponto 4.2.4 do Guia Técnico de 2018) – Proceder à graduação preliminar:

Exposição profissional	Risco	Médio	Alto	Muito Alto
Exposição profissional	(Verde)	(Amarelo)	(Laranja)	(Vermelho)

Parte B. A preencher pelo Médico do Trabalho

B.2.3.1. Foi realizada avaliação biológica: ☐ Sim ☐ Não ☐

Justificar "Não":
☐ Contexto de exposição profissional "baixo" (de acordo com o ponto 7 do Guia Técnico de 2018)
☐ Avaliação biológica não realizada em ☐ dias/mes
Não existe biotransformador disponível? ☐ Sim ☐ Não ☐

B.2.3.2. Avaliação (seis) efetuada:

Parâmetro avaliado	Observações	Classificação

B.2.3.3. Graduação do nível de exposição profissional (ver Ponto 4.2.4 do Guia Técnico de 2018) – Proceder à graduação final:

Exposição profissional	Risco	Médio	Alto	Muito Alto
Exposição profissional	(Verde)	(Amarelo)	(Laranja)	(Vermelho)

3. AVALIAÇÃO DO RISCO PROFISSIONAL – Ponto 4.3 do Guia Técnico de 2018

3.1. Graduação do nível de risco profissional – vide Quadro 8 do Guia

A. 3.1.1. Proceder à graduação preliminar:

Risco profissional	Baixo	Médio	Alto	Muito Alto
(sinalize o resultado com cruz)	<input type="checkbox"/> (Verde)	<input type="checkbox"/> (Amarelo)	<input type="checkbox"/> (Laranja)	<input type="checkbox"/> (Vermelho)

A. 3.1.2. É necessário implementar medidas de prevenção / proteção para além das indicadas no ponto 2.2.2.3:

Não ☐ Sim ☐

A. 3.1.3. Se "Sim" quais? _____

B. 3.1.1. É necessário aplicar fator de correção individual?

Não ☐ Sim ☐

B. 3.1.2. Proceder à graduação final:

Risco profissional	Baixo	Médio	Alto	Muito Alto
(sinalize o resultado com cruz)	<input type="checkbox"/> (Verde)	<input type="checkbox"/> (Amarelo)	<input type="checkbox"/> (Laranja)	<input type="checkbox"/> (Vermelho)

B. 3.1.3. É necessário implementar medidas de prevenção / proteção para além das indicadas no ponto 2.2.2.3 e pelo TST/TSST: Não ☐ Sim ☐

B. 3.1.4. Se "Sim" quais? _____

A. Nome: _____

Título Profissional: _____

Modalidade de prestação de Serviços de Segurança do Trabalho: _____

Entidade prestadora de Serviço Externo (se aplicável): _____

NIF: _____

B. Nome: _____

N.º Cédula: _____

Modalidade de prestação de Serviços de Saúde do Trabalho: _____

Entidade prestadora de Serviço Externo (se aplicável): _____

NIF: _____

3. AVALIAÇÃO DO RISCO PROFISSIONAL – Ponto 6.3. do Guia Técnico da DGS

3.1. Graduação do nível de risco profissional – vide Quadro 8 do Guia

A. 3.1.1. Proceder à graduação preliminar:

Risco profissional	Baixo	Médio	Alto	Muito Alto
(sinalize o resultado com cruz)	<input type="checkbox"/> (Verde)	<input type="checkbox"/> (Amarelo)	<input type="checkbox"/> (Laranja)	<input type="checkbox"/> (Vermelho)

A. 3.1.2. É necessário implementar medidas de prevenção / proteção para além das indicadas no ponto 2.2.2.3:

Não ☐ Sim ☐

A. 3.1.3. Se "Sim" quais? _____

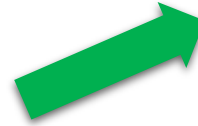
A. Nome: _____		B. Nome: _____	
Título Profissional: _____		N.º Cédula: _____	
Modalidade de prestação de Serviços de Segurança do Trabalho: _____		Modalidade de prestação de Serviços de Saúde do Trabalho: _____	
Entidade prestadora de Serviço Externo (se aplicável): _____		Entidade prestadora de Serviço Externo (se aplicável): _____	
NIF: _____		NIF: _____	

Esta Ficha tem por base o Guia Técnico n.º 2 "Vigilância dos trabalhadores expostos a agentes químicos CMR" publicado pela Direção-Geral da Saúde e disponível em: www.dgs.pt/saude-ocupacional.aspx
Versão de 28/03/2018

Cytostatics – Occupational exposure to antineoplastic agents

SOME BASIC FEATURES

- heterogeneous group
- Different chemical nature and mechanism of action
- Restricts cell maturation and proliferation
- In specific phases of the cell cycle



THERAPEUTIC USE

- Inhibits or prevents neoplasm evolution



OCCUPATIONAL RISK FACTORS

- Carcinogenic
- Toxic for reproduction
- Mutagenics

Cytostatics – Occupational exposure to **ANTINEOPLASTIC AGENTS**

Table 1. Examples of different types of antineoplastic agents and their carcinogenicity


Alkylating agents	Melphalan	Anti-metabolites	Methotrexate	Topoisomerase inhibitors	Doxorubicin
	Chlorambucil				
	Cisplatin		Thioguanine		Etoposide
	Cyclophosphamide				
Anti-microtubule agents	Paclitaxel	Others	Arsenic trioxide	Carcinogenicity* <input checked="" type="checkbox"/> Group 1 <input checked="" type="checkbox"/> Group 2A <input type="checkbox"/> Group 2B <input type="checkbox"/> Group 3 <input type="checkbox"/> Not classified	
	Vincristine		Bleomycin		

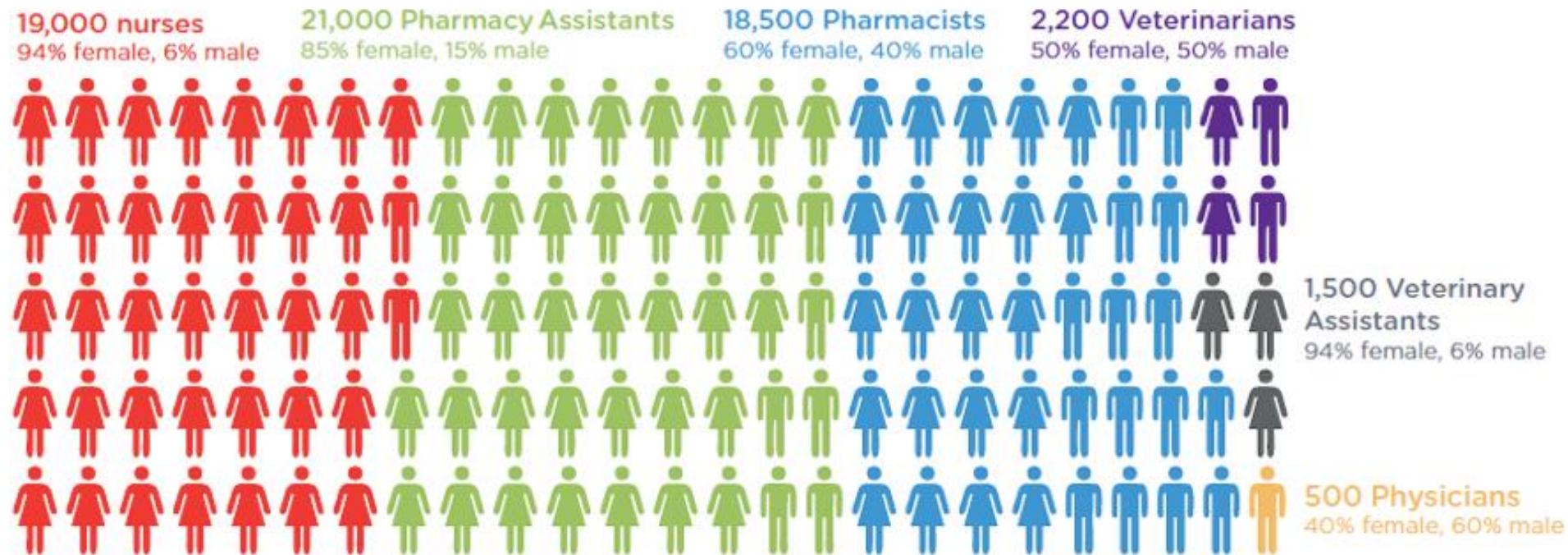
*Based on classification of the International Agency for Research on Cancer (IARC) (2). Group 1: carcinogenic to humans; Group 2A: probably carcinogenic to humans; Group 2B: possibly carcinogenic to humans, Group 3: not classifiable as to its carcinogenicity to humans.

<http://www.occupationalcancer.ca/wp-content/uploads/2014/07/Antineoplastics-and-cancer-ENG.pdf>

Total number of workers exposed = 63,000

79% female, 21% male

 = 500 workers



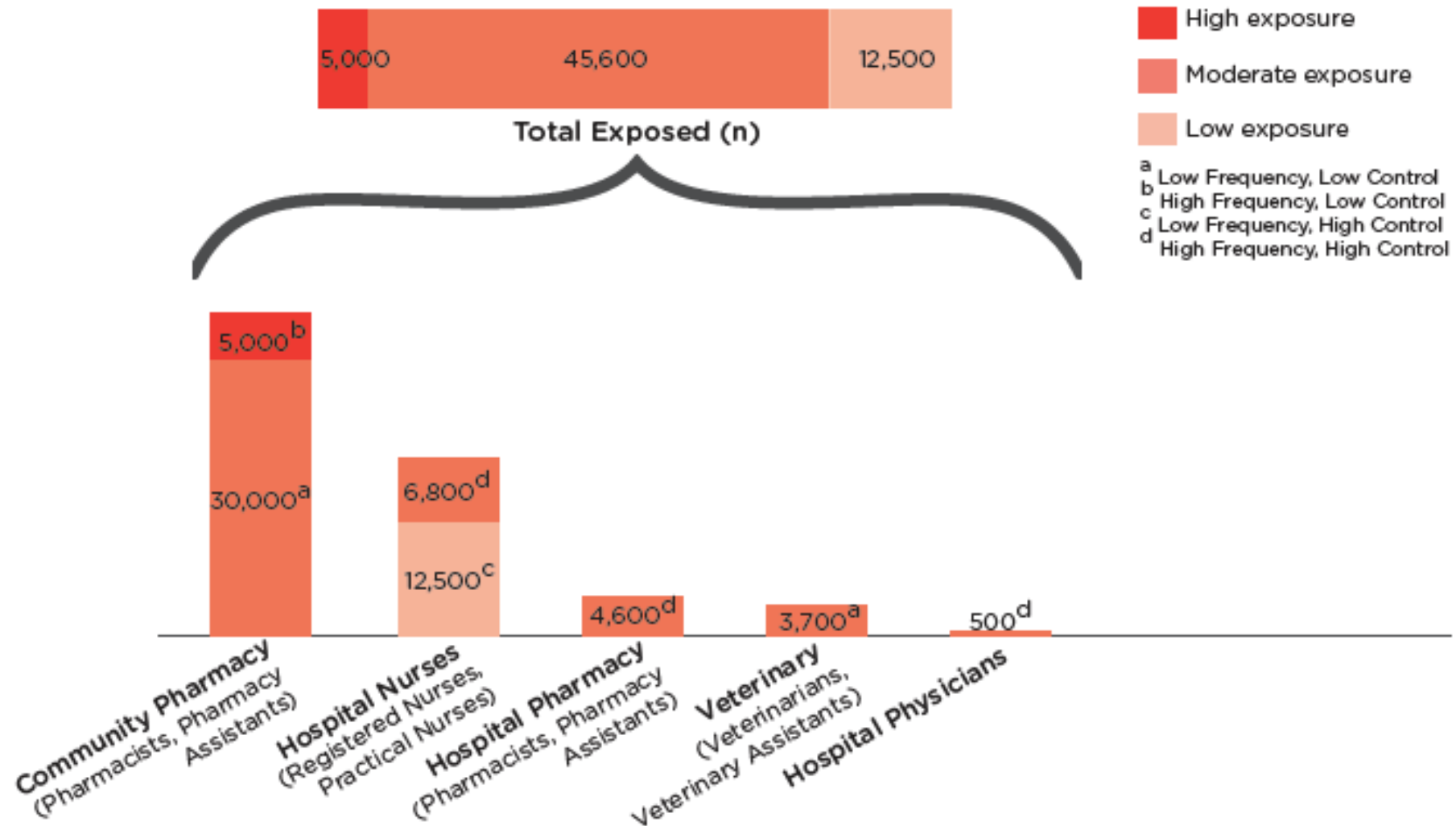
Other potentially exposed workers
 In hospitals: housekeeping; laundry; shipping/
 receiving; transport
 Outside of hospitals: manufacturing;
 industrial laundry

CAREX Canada prevalence of exposure estimate for antineoplastic agents for 2006

<http://www.occupationalcancer.ca/wp-content/uploads/2014/07/Antineoplastics-and-cancer-ENG.pdf>



Figure 2. CAREX Canada level of exposure estimate for antineoplastic agents for 2006.



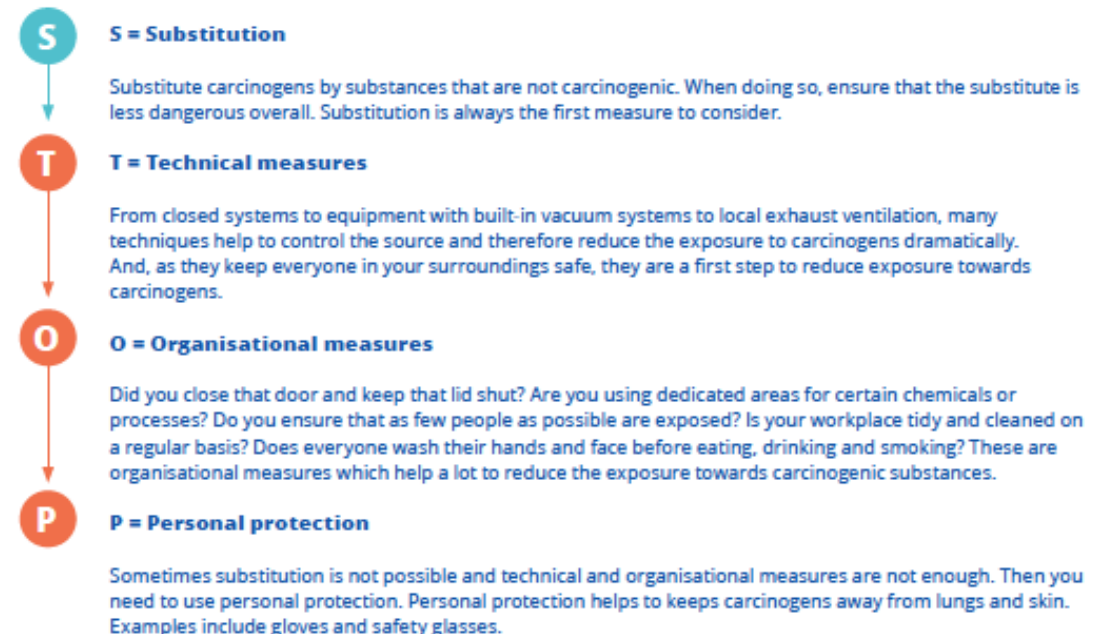
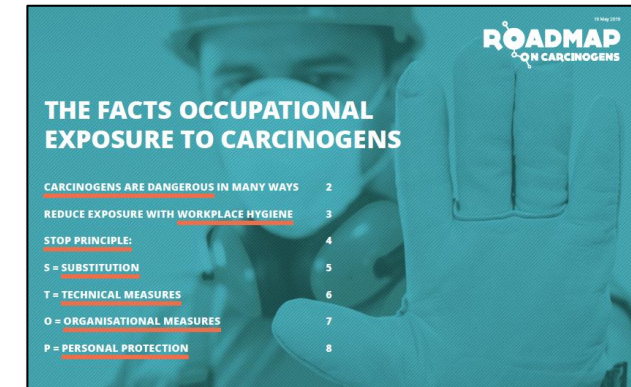
CAREX Canada prevalence of exposure estimate for antineoplastic agents for 2006
<http://www.occupationalcancer.ca/wp-content/uploads/2014/07/Antineoplastics-and-cancer-ENG.pdf>



Cytostatics – Occupational exposure to antineoplastic agents

Source of Exposure: Handling of carcinogenic agents

- Reception, transport and storage
- Preparation
- Administration
- Waste collection/disposal
- Elimination of excreta from treated patients
- Direct contact with the product: cleaning the preparation unit, cleaning up spills

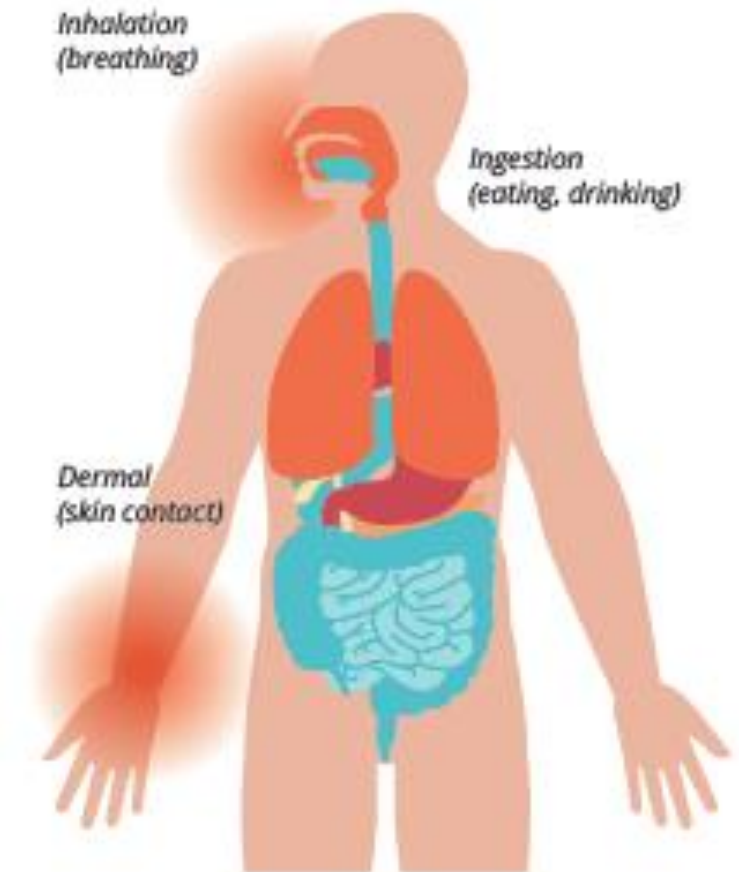


Roadmap on carcinogens. THE FACTS OCCUPATIONAL EXPOSURE TO CARCINOGENS. <https://roadmaponcarcinogens.eu/wp-content/uploads/2019/12/Occupational-exposure-to-carcinogens.pdf>

Cytostatics – Occupational exposure to antineoplastic agents

Professional exposures

- **Skin:** direct contact with drugs or surfaces or equipment contaminated by them
- **Inhalation:** some drugs can vaporize at room temperature or when manipulated generate the formation of aerosols or dust
- **Oral (ingestion):** infrequent, contaminated hands (eating, drinking)
- **Parenteral:** bites



Cytostatics – Occupational exposure to antineoplastic agents

Characteristics of the Professional Exposure:

- **Low doses** for extended periods of time
- **High doses** in accidental situations
- Impact of exposure difficult to assess

A challenge for occupational medicine
in the health surveillance of workers:

- Safety Data Sheet
- Indirect indicators: Environmental control
- Direct indicators: Biomonitoring
- Audited Procedures
- Professional experience

Safety Data Sheet (SDS)

www.medkoo.com

Version: 3.12
Print Date: 8/26/2020
Revision Date: 8/26/2020

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name: Cyclophosphamide monohydrate
Product Catalogue Number: 100190
Brand: MedKoo Biosciences
CAS-No: 6055-19-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Laboratory chemicals, Synthesis of substances.

1.3 Details of the supplier of the safety data sheet

Company: MedKoo Biosciences, Inc.
2500 Gateway Centre Blvd. Suite 400, Morrisville, NC27560, US
Telephone: 919-436-5577
Fax: 919-980-4831

1.4 Emergency telephone number

For chemical emergency spill, leak, fire, exposure, or accident call CHEMTREC day or night: Within USA & USA and Canada: +1 703-527-3887 (collect calls accepted).

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Acute toxicity, Oral (Category 3), H030
Carcinogenicity (Category 1A), H350

2.2 Label element

Pictogram

Signal word

Danger

Hazard statement(s)

H301

Toxic if swallowed.

H350

May cause cancer.

Precautionary statement(s)

P201:

Obtain special instructions before use.

P202:

Do not handle until all safety precautions have been read and understood.

P264:

Wash skin thoroughly after handling.

P280:

Wear protective gloves/ eye protection/ face protection.

P301 + P330:

If SWALLOWED: Immediately call a POISON CENTER or doctor/hospital.

P303 + P361:

If exposed or concerned: Get medical attention/advice.

P304:

Rinse mouth.

P501:

Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards – no data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms:

Ciclofosfamida; Ciclofosfamid; Claphene CP monohydrate; Cyclophospham; Cyclobisphosphamid;
monohydrate; Cyclophosphamidum; Cyclophosphan; Cyclophosphoramin;
Syklofosfamid; Zytosan; US brand names: Clafen; Cytosar; Neosar; Fort
Cikloal; Cycloblastin; Cycloblastine; Cyclostin; Cyclostine; Cytophos
Fonfauren; Genoxal; Lodoxia; Procytot; Sandoxian

Formula:

$C_4H_{10}ClN_2O_3P$

Molecular weight:

279.10

CAS-No:

6055-19-2

Component

Classification

Danger

HOPALIS

Hospital Particular de Lisboa

Higiene e Segurança

Resíduos Hospitalares

SERVIÇO DE SAÚDE, HIGIENE E SEGURANÇA NO TRABALHO

Setembro de 2001

Para: Direção

Data: 05-12-2001

(Rubrica)

Com o conteúdo de:

BOLSA DE DISTRIBUIÇÃO A Todos os serviços

Observações:

MANUAL DE PROCEDIMENTOS ADMINISTRAÇÃO DE CICLOFOSFAMIDA - EV			
		Página 1 de 4	Data: 05-12-2001
Assunto: Injeções Intravenosas	Localização: Área de Injeções Intravenosas	Maria do Rosário, Enfermeira	
Versão: 01	Revisão:		Data:
Revisão: 02	Aprovação: Diretor:		Data:
	Diretor (C):		Data:

Âmbito:

L. Todos os enfermos do Serviço 2 Sala 2

Objetivos:

- Normalizar procedimentos na administração de fármacos Ciclofosfamida EV.
- Minimizar efeitos secundários nos manipulados
- Prevenir contaminações no manipular e no ambiente
- Assegurar a esterilidade do fármaco

Definição:

• **Ciclofosfamida** é um agente antineoplásico, cujo metabolismo é a montada fosforáda, que ao ligar-se com os ácidos nucleicos de moléculas intracelulares exerce a sua ação citotóxica (inibição da síntese de proteínas). É bem absorvida no trato gastrointestinal, tem propriedades imunossupressoras. Metaboliza-se no fígado e a sua meia-vida é prolongada na insuficiência renal. A eliminação é por via renal, com menos de 25% de forma inalterada.

Reações Adversas:

- Úlceras escuras
- Diarreias
- Tonturas
- Rash cutâneo
- Vómitos
- Cansaço
- Sangramento nasal ou das gengivas

ADMINISTRAÇÃO DE CICLOFOSFAMIDA (S.2.S.)

Página 1 de 7

Cytostatics – Occupational exposure to antineoplastic agents

Environmental Control

- Detectable levels in **ambient air**
- Widespread contamination of **equipment and surfaces**
- We need **reference values** to establish safe work



Interventions for Environmental Control:

- **We need regulated methods (guidelines) to define sampling and analysis techniques:**
- to evaluate the effectiveness of the chambers, to evidence the presence of the agent and control their diffusion to other areas
- **Technical Measures (STOP/roadmap carcinogens) - Preparation:**
From (vertical laminar flow chamber+pharmaceutic) to **Robot Closed Cameras**
Never on a table (also in veterinarian clinics)!!!...

CMR– Occupational exposure to antineoplastic agents

Recommendations to control exposure of CMR

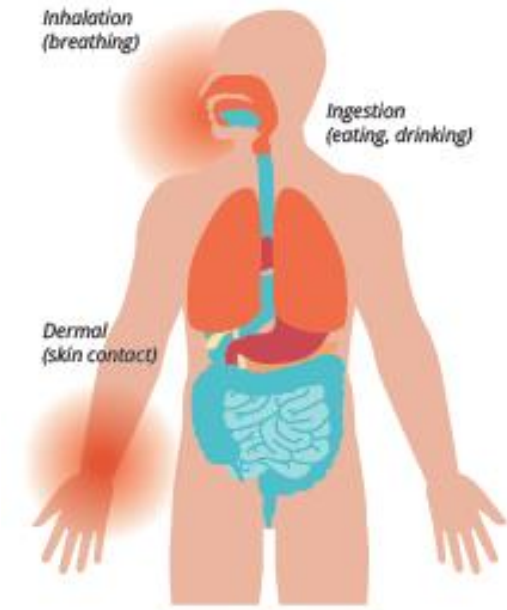
- The trays should be cleaned, decontaminated and used only once.
- The bathroom floor should be cleaned more frequently (every hour, if possible) as well as the door handles.
- The use of the toilet, only in the sitting position;
- **In-service training** should include at least **one workshop per year**;
- [...] carry out at least **one environmental monitoring per year**.
- [...] The cleaning and **decontamination of the laminar flow chambers** must be carried out carefully, at the end of the shift;
- Ideally, to consider **to acquire a robot to prepare these drugs**.

Source: Silva, J.O. Cytostatic-drugs handling in hospitals: Impact study of the contaminationat occupational environments. Repositorium.uminho.pt [Internet]. 2018. Available from: <http://hdl.handle.net/1822/59366>

Cytostatics – Occupational exposure to antineoplastic agents

Patient as Source of exposure:

- eliminate important amounts of cytostatics
- **Secretions** of patients
- **Feces and Urine** (some up to 48h – 7 days)
- Source of exposure through **clothing or skin**



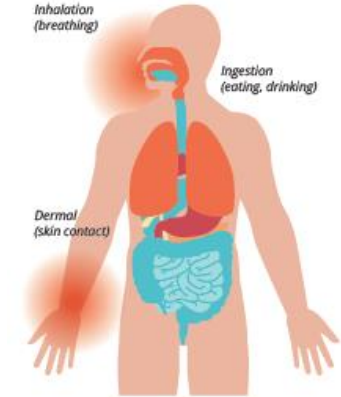
Personal protective equipment (Protective measures):

- Cytostatics have been detected **inside masks** and **gowns**
- **Gloves** have been shown to be permeable to several cytostatics
- Protective measures have limited effectiveness

Cytostatics – Biomonitoring

Challenge of the Biological Indicators of exposure (BI):

- Exposed workers often **absorb significant amounts**
- **Difficulty in selecting an indicator** that is sufficiently sensitive and specific to follow up on the exposed health professional



Selective methods:

- **Analytical Assessment Challenge:** the **blood** or **urine** concentration of a particular compound or its metabolites **is low**, due to chemical reactivity, biotransformation and the expected low level of exposure
- **Biological indicators of internal dose:** presence of cytostatics or their metabolites in workers' urine

Cytostatics – Biomonitoring

Non-Selective methods:

- measure common properties of a certain chemical group (eg alkylants)
- **Urinary mutagenicity** (Ames Test - detection of chemical mutagenic agents)
- Determination of **urinary thioethers**

Attention:

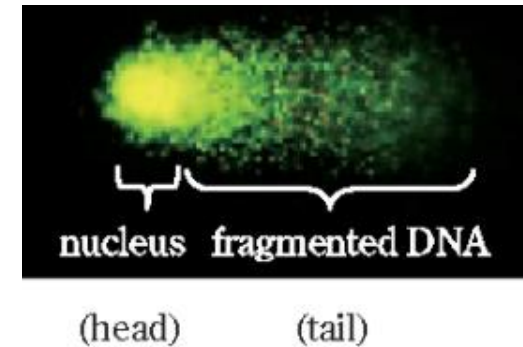
Non-specific results, which may be altered in **smokers**, diets, exposure to **environmental substances**.



Cytostatics – Biomonitoring

Biological monitoring of exposure:

- Most appropriate tests: **Genotoxicity**
- Analysis of **Sister Chromatid Exchange** (cumulative exposure)
- **Chromosomal aberrations**: increased risk of cancer
- DNA damage (COMET Test - genotoxicity test)



Difficulties:

- laborious technique
- There are no validated performance criteria that can be recommended

Cytostatics – Occupational exposure to antineoplastic agents

Health effects

- We need more Epidemiological studies to study associations between occupational exposure to cytostatics and health effects
- Some studies indicate that, some exposed professionals have an increased prevalence of some symptoms attributable to acute cytostatic toxicity

Toxicity

- Cardiac
- **Kidney**
- Central Nervous System
- Lung
- **Hematological**
- Liver

Allergic

- Anaphylaxis
- Dermatitis
- Itching
- Conjunctivitis

Others

- Hyperemesis (nausea and vomiting)
- **Alopecia**

Cytostatics – Occupational exposure to antineoplastic agents

Health effects

Increased incidence of certain types of cancer

- (AML) **Acute Myeloid Leukemia** (alkylating agents or topoisomerase II inhibitors)
- **Bladder neoplasm** and **cyclophosphamide**
- Breast cancer (some studies suggest)

Repercussions on reproduction and embryo-fetal development

- Increased frequency of **miscarriages** and **congenital malformations**
- Reduced fertility or infertility



Cytostatics – Occupational Health Surveillance

Action Protocol for Health Surveillance

- work tasks + product safety sheets+ Risk Assessments
- Best practices: maximum levels of prevention to reduce exposure

Medical evaluations:

Admission / Periodical / **Occasional:**

After acute accidental exposure,

After prolonged absence,

After change of post,

after cessation of activity.

The image shows a detailed Portuguese occupational health surveillance form. It includes sections for personal data, work tasks, and risk assessment. The form is designed to be filled out by a TST/TSSST (Technical Supervisor/Supervisor of Safety and Health) and a Medical Doctor. It features a color-coded risk scale and checkboxes for 'Sim' (Yes) and 'Não' (No). The bottom section is titled '3. AVALIAÇÃO DO RISCO PROFISSIONAL' and contains further questions and tables for risk assessment.

Cytostatics – Occupational Health Surveillance

CMR Exposure Records

- **Previous exposures (Products x Time)**
- Characterization of current activity (Products x Time)
- Night work/night shifts?
- **Appropriate training**
- Protective equipment used
- **INTEGRATED PROFESSIONAL RISK ASSESSMENT FORM**
CMR (Carcinogens, Mutagens and Toxics for Reproduction)

The form is titled 'FIC - FICHA DE AVALIAÇÃO DO RISCO PROFISSIONAL' and is part of the 'SOPM - Sociedade Portuguesa de Medicina do Trabalho'. It includes sections for 'Dados Pessoais do Trabalhador', 'Avaliação da Exposição Profissional', and 'Avaliação do Risco Profissional'. The form is divided into two main parts: A (for the worker) and B (for the physician). It includes checkboxes for various risk factors and exposure levels.

Cytostatics – Occupational Health Surveillance

Targeted Symptoms Search: alarm

- **Hair loss**
- **Irritation of the skin and mucous membranes**
- **Headache**
- Nausea
- Vertigo / dizziness
- Vomiting
- General malaise
- Skin hyperpigmentation
- Itching

Suspiro A, Prista J. Exposição ocupacional a citostáticos e efeitos sobre a saúde. Rev Port Saúde Pública [Internet]. 2012 Jan;30(1):76–88. Available from: <http://dx.doi.org/10.1016/j.rpsp.2011.12.002>

Cytostatics – Occupational Health Surveillance

Personal Clinical Records

- Clinical background (**gynecological** and **obstetric** history, pathologies)
- Previous **chemotherapy** or **radiotherapy** treatments, allergy to cytostatics, blood test changes in the hematological, hepatic and renal function, immunodeficiencies
- Family history: cancers
- Habits (tobacco, alcohol, physical activity, etc.)

<https://www.euro.who.int/en/health-topics/environment-and-health/occupational-health/news/news/2016/02/preventing-cancer-the-european-code-against-cancer>



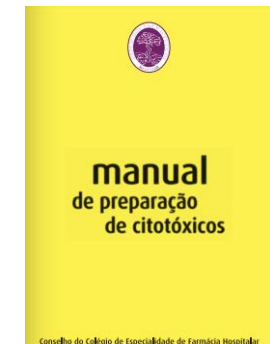
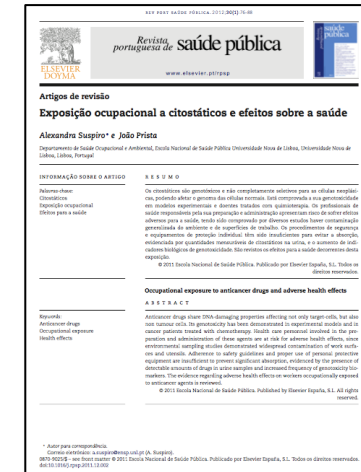
Cytostatics – Occupational Health Surveillance

Objective targeted clinical examination:

- Inspection of skin and mucous membranes
- Pulmonary and cardiologic auscultation
- Abdominal palpation
- Ganglion exploration
- Neurological exploration

Complementary diagnostic tests:

- Complete blood count with platelets; kidney and liver function analyses; Urine analysis;
- Assessing lung function



Suspiro A, Prista J. Exposição ocupacional a citostáticos e efeitos sobre a saúde. Rev Port Saúde Pública [Internet]. 2012 Jan;30(1):76–88.

Available from: <http://dx.doi.org/10.1016/j.rpsp.2011.12.002>

Colégio Farmácia Hospitalar. Manual de Preparação Citotóxicos. 2013.

si2021.eu

FIT FOR WORK

- Additional risks if a smoker
- Pregnancy

- Precautions to reduce exposure (STOP CANCER)
- Hygiene and clothing procedures
- Personal Protective Equipment (PPE)
- Measures in case of accidental spillage

FICHA DE APTIDÃO PARA O TRABALHO¹

Plano de Formação para a Região do Alentejo - 2014-2020 - Anexo 2 - 2.º Grupo de Trabalho (GT 2.014.02.01) - 2.014.02.01.01

ENTIDADE EMPREGADORA/EMPRESA

Nome:	Nº/IMP: <input type="text"/>	
Endereço:	Cód. Postal: <input type="text"/>	
Localidade:	Município: <input type="text"/>	
Telefone:	E-mail: <input type="text"/>	

SERVIÇO DE SAÚDE DO TRABALHADOR

Atendimento de Urgência de Serviço de Saúde:	Sim	Em caso	Exatidão	Outro
Atendimento de Urgência de Serviço de Saúde:	Sim	Em caso	Exatidão	Outro
Atendimento de Urgência de Serviço de Saúde:	Sim	Em caso	Exatidão	Outro

TRABALHADOR

Nome:	Nº/IMP: <input type="text"/>	
Sexo:	<input type="checkbox"/> M	<input type="checkbox"/> F
Idade de admissão no emprego:	<input type="text"/>	Nacionalidade:
Forma de admissão no emprego:	<input type="text"/>	Compartimento:
Forma de admissão no emprego:	<input type="text"/>	Forma de admissão no emprego:
Forma de admissão no emprego:	<input type="text"/>	Forma de admissão no emprego:

PONTO DE AVALIAÇÃO

Atividade de produção no trabalho:	Sim	Em caso	Exatidão	Outro
Atividade de produção no trabalho:	Sim	Em caso	Exatidão	Outro
Atividade de produção no trabalho:	Sim	Em caso	Exatidão	Outro

FASE DE SAÚDE E RESULTADO DO APTIDÃO

Nome:	RESULTADO DO APTIDÃO PARA A FUNÇÃO/PROPOSTA OU ATUAL	
Sexo:	<input type="checkbox"/> M	<input type="checkbox"/> F
Idade:	<input type="text"/>	Atividade:
Forma de admissão no emprego:	<input type="text"/>	Forma de admissão no emprego:
Forma de admissão no emprego:	<input type="text"/>	Forma de admissão no emprego:
Forma de admissão no emprego:	<input type="text"/>	Forma de admissão no emprego:

RECOMENDAÇÕES

Atividade de produção no trabalho:	Sim	Em caso	Exatidão	Outro
Atividade de produção no trabalho:	Sim	Em caso	Exatidão	Outro
Atividade de produção no trabalho:	Sim	Em caso	Exatidão	Outro

Módulo de Trabalho

Atividade:	Sim	Em caso	Exatidão	Outro
Atividade:	Sim	Em caso	Exatidão	Outro
Atividade:	Sim	Em caso	Exatidão	Outro

1 - Como o presente Ficheiro de Aptidão para o Trabalho deve ser preenchido em cada caso em que se requer a avaliação e o resultado do Resultado de Serviço de Saúde do Trabalhador, em conformidade com o Regulamento de Segurança e Saúde no Trabalho.

[illegible]

Cytostatics – Occupational Health Surveillance

Criteria for fitness for Work

FIT TO WORK WITH CONDITIONS or RESTRICTIONS / or NOT FIT TO WORK

- **Pregnant** and **breastfeeding** women
- Women with a history of abortion and childbearing age and planning to reproduce
- Allergy to cytostatics
- Important dermatological pathology
- Exposure to Ionizing Radiation (above 15mSv/year)
- Previous treatment with cytostatics or immunosuppressants;
- Immunosuppressed / Immunodepressed workers
- Change of biological parameters (according to medical criteria)

This is a Portuguese form titled 'FICHA DE APTIDÃO PARA O TRABALHO' (Fitness for Work Form). It is used for occupational health surveillance. The form includes sections for: 'ENTIDADE EMPREGADORA/EMPRESA' (Employer/Company), 'SERVIÇO DE SAÚDE DO TRABALHADOR' (Worker's Health Service), 'TRABALHADOR' (Worker), 'PÓSITO DE TRABALHO' (Work Post), 'EXAME DE SAÚDE E RESULTADO DE APTIDÃO' (Health Exam and Fitness Result), and 'RECOMENDAÇÕES' (Recommendations). It contains various checkboxes and fields for recording medical history, work conditions, and the results of health assessments.

This is a Portuguese form titled 'Ficha de Avaliação do Risco Profissional' (Professional Risk Assessment Form). It is used for assessing professional risks. The form includes sections for: '2.1. Estimativa da concentração de fator de risco profissional e do estado de saúde do trabalhador' (Estimation of professional risk factor concentration and worker's health status), '2.2. Avaliação/Classificação' (Assessment/Classification), and '3. AVALIAÇÃO DO RISCO PROFISSIONAL' (Professional Risk Assessment). It contains various checkboxes and fields for recording risk factors, health status, and the results of risk assessments.

CMR– Occupational exposure to antineoplastic agents

Occupational medicine is the medical specialty that does more **PRIMARY** and **SECONDARY Prevention**.

The systematic surveillance of workers by Occupational Medicine uses the **methodology of scientific investigation of Longitudinal studies**.

Occupational medicine often presents proposals for years to control certain occupational risks, but changes only happen when it is published "**good quality**" legislation.

We produce **scientific evidence** at the service of **workers, employers, Regulatory institutions** and **Legislators**.

Let's Stop Cancer at Work, All Together!

References:

- Roadmap on carcinogens. Taking action on work-related cancer. <https://osha.europa.eu/en/themes/dangerous-substances/roadmap-to-carcinogens>
- Roadmap on carcinogens. THE FACTS OCCUPATIONAL EXPOSURE TO CARCINOGENS. <https://roadmaponcarcinogens.eu/wp-content/uploads/2019/12/Occupational-exposure-to-carcinogens.pdf>
- Moreira S, Santos C, Ramos C, et al. Vigilância da saúde dos trabalhadores expostos a agentes químicos cancerígenos, mutagénicos ou tóxicos para a reprodução – Guia Técnico n.º 2 / Programa Nacional de Saúde Ocupacional (PNSOC): 2.º Ciclo – 2013/2017. Guia Técnico Nº2 DGS. 2018; <https://www.dgs.pt/saude-ocupacional/referenciais-tecnicos-e-normativos/guias-tecnicos/guia-tecnico-n-2-pdf1.aspx>
- Guia Técnico n.º 2 - Ficha de Avaliação integrada de Risco Profissional. <https://www.dgs.pt/saude-ocupacional/referenciais-tecnicos-e-normativos/guias-tecnicos/gt2.aspx>
- Suspiro A, Prista J. Exposição ocupacional a citostáticos e efeitos sobre a saúde. Rev Port Saúde Pública [Internet]. 2012 Jan;30(1):76–88. Available from: <http://dx.doi.org/10.1016/j.rpsp.2011.12.002>
- WHO. Preventing cancer - The European code against cancer. Available from: <https://www.euro.who.int/en/health-topics/environment-and-health/occupational-health/news/news/2016/02/preventing-cancer-the-european-code-against-cancer>
- Colégio Farmácia Hospitalar. Manual de Preparação Citotóxicos. 2013.
- NIOSH—Publications Dissemination. NIOSH ALERT, preventing occ exposure to antineoplastic drugs. US Dep Heal Hum Serv Centers Dis Control Prev Natl Inst Occup Saf Heal DHHS. 2004;(165).
- IARC (International Agency for Research on Cancer). 2014. Agents classified by the IARC monographs, volumes 1–109. <http://monographs.iarc.fr/ENG/Classification/ClassificationsAlphaOrder.pdf>
- NIOSH (National Institute for Occupational Safety and Health). 2004. NIOSH alert: preventing occupational exposures to antineoplastic and other hazardous drugs in health care settings. <http://www.cdc.gov/niosh/docs/2004-165/pdfs/2004-165.pdf>
- CAREX Canada. 2012. Occupational exposure to antineoplastic agents in Canada: detailed methods and results. http://www.carexcanada.ca/Antineoplastics_Methods_and_Results_Paper_2012.pdf



si2021.eu

OBRIGADO
HVALA
THANK YOU