

PROBLEMS OF BIOCOMPATIBILITY
IN
MODERN ORTHOPAEDIC IMPLANTS



CHEMICAL CARCINOGENICITY

- *There are 1,500,000 known compounds, of which
- *There are 2,000 compounds known to be carcinogenic in at least one animal, of which
- *There are 22 compounds suspected to be carcinogenic in man.
- *Biological activity does not imply carcinogenicity, thus most insecticides (unless contaminated with dioxin) are not carcinogenic in animals.

CARCINOGENICITY OF NICKEL AND COBALT COMPOUNDS

<u>Compound</u>	<u>Animal</u>	<u>Route</u>	<u>Tumor Type</u>
Ni	Rats	IM inj.	Fibrosarcoma Myeloma
	Hamsters	IM impl.	
NiO	Hamsters	IT inj.	
Ni ₃ S ₂	Rats	IM inj.	
Ni(CO) ₄	Rats, Man	Inhal.	
Co	Rabbits	IO impl.	Sarcoma
Co	Guinea Pig	IT inj.	Adenomatosis
CoS	Rats, mice	IM inj.	Sarcoma
Co-Cr	Rats	IM impl.	Sarcoma

NOTE: Rod implants found non-carcinogenic (Rats/2 years)

GAECHTER ET AL, (1977)

MCKEE-FARRAR THR

		Skin	
		Sensitive	Insensitive
Prosthesis is	Loose	9 (11 pros)	5
	Not Loose	0	24

Sensitive: to at least one: Ni, Co, Cr

EVANS ET AL, (1974)

MCKEE-FARRAR THR

Skin

Sensitive

Insensitive

Prosthesis
Loose
Not Loose

0	20
0	0

Tests for: Ni, Co, Cr

BROWN ET AL, (1977)