

### Section 3. Cancer in animals

Section 3 summarizes all the pertinent carcinogenicity bioassays, classifies the evidence relevant to carcinogenicity in experimental animals into one of four defined categories (sufficient, limited, inadequate or suggesting lack of carcinogenicity), and *identifies tumour sites* for those agents for which the evidence for carcinogenicity will be *sufficient* in experimental animals.

In this section, only *published (or accepted for publication) sources of information* in the peer-reviewed literature can be used (also see the Preamble). Exceptionally, publicly available data from government agency reports are also considered. Studies of doubtful quality may also be summarized for discussion by members of the Working Group assigned to this section.

#### Summarizing the evidence

##### Tables of study design and results

Tables will be constructed using the IARC Table Builder online tool embedded in the IARC Online Publications System (IOPS). In the Table Builder, please fill in all the fields provided for descriptive information and results for each study. Study design and results of all pertinent individual studies will be presented, including:

- Species, strain (sex) [note if unspecified], age at start if unusual, duration, reference
- Route, dosing regimen, numbers of male and female animals/group at start
- Number of each tumour type/effective number of animals (incidence) and percentage, tumour multiplicity if provided
- Statistical significance of differences between groups, and statistical method used; if not provided, *P* values should be calculated by the Working Group and given in square brackets.
- Comments should include limitations of the study; survival data (if important); if any of the above items is not reported.

##### Text

Text is submitted in Word electronically via IOPS. For each study, indicate:

- Number of males and of females in each experimental and control group
- Strain
- Route of administration of test substance
- Treatment of controls (untreated, vehicle, “positive”)

- Doses as quoted in the original paper (conversions to SI units will be added by the Secretariat)
- Dosing schedules
- Duration of treatment
- Duration of observation
- Histological types of tumours in treated and control animals
- Increased/decreased incidence of each tumour type of interest (both benign and malignant) in treated compared to control animals; dose-response. Tumours with a low spontaneous incidence rate should also be reported if above incidence range in historical controls.
- Tumours at unusual sites, with early onset, etc...

Precancerous lesions and non-neoplastic histopathological lesions that may be relevant to interpretation of tumour incidence, i.e., in the same target organ, should also be described.

The *author's interpretation* may be included if you consider it necessary, but it must be clearly identified as such.

Strengths and weaknesses of study should be presented in square brackets: [inadequate duration, no controls, underpowered study, inadequate reporting of exposure or results, high mortality]

### **Preferred outline**

For each agent:

#### **3.1. Mouse**

- 3.1.1 Oral administration**
- 3.1.2 Skin application**
- 3.1.3 Subcutaneous administration**
- 3.1.4 Inhalation**
- 3.1.5 Intratracheal administration**
- 3.1.6 Intrapleural administration**
- 3.1.7 Intraperitoneal administration**
- 3.1.8 Intravenous administration**
- 3.1.9 Transplacental and perinatal**
- 3.1.10 Other routes of exposure**
- 3.1.11 Administration with known carcinogens or other agents**
- 3.1.12 Carcinogenicity of metabolites**

#### **3.2 Rat**

- 3.2.1 Oral administration...**

**3.3 Hamster ...**

**3.4 Dog ...**

**3.5 Monkey ...**

**3.6 etc...**

*Checklist for quality control:* might include the following standards:

- Were adequate numbers of animals used?
- Were they allocated randomly to groups?
- Was the schedule of exposure adequate?
- Was the agent clearly defined or characterized?
- Was the duration of exposure adequate?
- Was survival acceptable?
- Was the duration of observation adequate?
- Was the study adequately reported?
- Were appropriate comparisons and statistical methods used? (See also the [Preamble](#))