INTERNATIONAL LEGISLATION ON MYCOTOXINS

BRAZIL

**Foods for human consumption**

- Peanuts (in-shell, shelled, raw, roasted), peanut paste (peanut paste, peanut butter):
  - Aflatoxins B1+B2+G1+G2 = 20 µg/kg
- Corn (whole grain, broken, mashed, ground, flours or other kind of flours):
  - Aflatoxins B1+B2+G1+G2 = 20 µg/kg
  - Fluid milk: Aflatoxin M1 = 0.5 µg/L
  - Milk powder: Aflatoxin M1 = 5.0 µg/L

- Aflatoxins B1+B2+G1+G2 = 20 µg/kg

OBS. This Portaria adopted the norms of MERCOSUL GMC/RES. No. 56/94

**Feeds for animal consumption: raw materials and rations**


For any raw material to be utilized directly or as ingredient for rations aimed to animal consumption:
- **Aflatoxins** (maximum) = 50 µg/kg

OBS.: The Ministry of Agriculture does not specify which metabolites but it is inferred *(my deduction)* that is the sum of B1+B2+G1+G2. This limit is valid for any purpose or product wherever is for direct consumption or as an ingredient for rations.

**The Portaria specifies the products.**
MERCOSUL

Legislation common to all four countries

GMC / RES. No.56/94
Fluid milk: AFM1 = 0.5 µg/L
Powdered milk: AFM1 = 5.0 µg/kg
Shelled corn: AFs B1,B2,G1,G2 = 20 µg/kg
Corn flour: AFs B1,B2,G1,G2 = 20 µg/kg
In-shell and shelled peanuts, raw or roasted: AFs B1,B2,G1,G2 = 20 µg/kg
Paste, creams and peanut butter: AFs B1,B2,G1,G2 = 20 µg/kg

Additional legislation of each country:

ARGENTINA

Baby foods: AFB1 = zero
Peanut, corn and by-products: B1 = 5 µg/kg; B1,B2,G1,G2 = 20 µg/kg
Soy flour: B1 = 30 µg/kg
Fluid and powdered milk: M1 = 0.05 µg/kg
Milk products: M1 = 0.5 µg/kg

URUGUAY

Aflatoxins B1,B2,G1,G2: Foods and spices = 20 µg/kg;
Soy and peanut products, dried fruits = 30 µg/kg
Cocoa kernels = 10 µg/kg;
Baby foods, processed = 3 µg/kg
Corn and barley = 200 µg/kg
Milk and milk products: Aflatoxin M1 = 0.5 µg/kg
Fruit juices: Patulin = 50 µg/kg
Rice, barley, porotos, coffee and corn: Ochratoxin A = 50 µg/kg

Legislations that follows, were compiled from the FAO publication:
WORLDWIDE REGULATIONS FOR MYCOTOXINS 1995 - A Compendium

AMÉRICAS

BAHAMAS

All foods and all grains: B1,B2,G1,G2 = 20 µg/kg
BARBADOS

All foods: $B_1, B_2, G_1, G_2 = 20 \, \mu g/kg$
Fluid milk: $M_1 = 0.05 \, \mu g/kg$
Rations: $B_1, B_2, G_1, G_2 = 50 \, \mu g/kg$

BELIZE

Corn, peanuts: $B_1, B_2, G_1, G_2 = 20 \, \mu g/kg$

CANADA

Nuts and products: $B_1, B_2, G_1, G_2 = 15 \, \mu g/kg$
Soft wheat: Deoxynivalenol = 2000 $\mu g/kg$
Feeds: $B_1, B_2, G_1, G_2 = 20 \, \mu g/kg$
Cattle and poultry feeds: Deoxynivalenol = 5000 $\mu g/kg$; HT-2 toxin = 100 $\mu g/kg$
Feeds for swine, veal and lactating animals: Deoxynivalenol = 1000 $\mu g/kg$; HT-2 toxin = 25 $\mu g/kg$

CHILE

Feeds: $B_1 = 20 \, \mu g/kg$; $B_1, B_2, G_1, G_2 = 50 \, \mu g/kg$

COLOMBIA

Foods: $B_1, B_2, G_1, G_2 = 20 \, \mu g/kg$
Cereals (sorghum, millet): $B_1, B_2, G_1, G_2 = 30 \, \mu g/kg$
Oilseeds: $B_1, B_2, G_1, G_2 = 10 \, \mu g/kg$
Cattle feeds: $B_1, B_2, G_1, G_2 = 50 \, \mu g/kg$
Sesame seeds: $B_1, B_2, G_1, G_2 = 20 \, \mu g/kg$
Poultry feeds: $B_1, B_2, G_1, G_2 = 20 \, \mu g/kg$

COSTA RICA (1991)

Corn for human consumption: $B_1, B_2, G_1, G_2 = 35 \, \mu g/kg$
Corn for animal consumption: $B_1, B_2, G_1, G_2 = 50 \, \mu g/kg$

CUBA (1991)

Foods, cereals, peanut: $B_1, B_2, G_1, G_2 = 5 \, \mu g/kg$
Rations and ingredients for rations: $B_1, B_2, G_1, G_2 = 5 \, \mu g/kg$

EL SALVADOR (1991)

Foods: $B_1, B_2, G_1, G_2 = 20 \, \mu g/kg$
Feeds in general: $B_1 = 10 \, \mu g/kg$
Feed supplements for swine, cattle and dairy cattle; feeds for cattle, goats and sheep: $B_1 = 20 \, \mu g/kg$
UNITED STATES OF AMERICA

Foods: B1,B2,G1,G2 = 20 µg/kg
Ready to eat wheat products: Deoxynivalenol = 1000 µg/kg
Milk products: M1 = 0.5 µg/kg

GUATEMALA (1991)

Corn, beans, rice sorghum peanuts and peanut butter: B1,B2,G1,G2 = 20 µg/kg
Concentrates for rations: B1,B2,G1,G2 = 20 µg/kg

HONDURAS

All foods: B2,G1,G2 = 1 µg/kg
Corn (whole or ground kernels): B1 = 1 µg/kg
Baby foods: B1,B2,G1,G2 = 0.01 µg/kg; M1 = 0.02 µg/kg
Milk and milk products: M1 = 0.05 µg/kg
Cheese = M1 = 0.25 µg/kg

JAMAICA (1991)

Foods and grains: B1,B2,G1,G2 = 20 µg/kg

MÉXICO

Flours: B1,B2,G1,G2 = 20 µg/kg
Cereals for cattle and fattening rations for swine: B1,B2,G1,G2 = 200 µg/kg
Feeds for lactating cows and poultry: B1,B2,G1,G2 = 0 µg/kg

PANAMÁ

No regulations

PERU

All foods: B1,B2,G1,G2 = 10 µg/kg

REPÚBLICA DOMINICANA (1991)

Corn and products, peanuts, soybean, tomato and products: B1,G1 = 0 µg/kg
Imported corn: B1,B2,G1,G2 = 20 µg/kg

SURINAME (1991)

Corn: B1,B2,G1,G2 = 30 µg/kg
Peanuts and products, legumes: B1 = 5 µg/kg
Feeds: B1,B2,G1,G2 = 30 µg/kg
VENEZUELA

Rice flour: B1,B2,G1,G2 = 5 µg/kg
Feeds: B1,B2,G1,G2 = 20 µg/kg

EUROPEAN UNION

Legislation common to all member countries:

Peanuts, nuts in general and dried fruits for direct intake or as food ingredient:
Aflatoxin B1 = 2 µg/kg; Total (B1+B2+G1+G2) = 4 µg/kg
Peanuts prior to selection or other physical process: B1 = 8 µg/kg; Total AF = 15 µg/kg
Nuts and dried fruits to be subjected to a selection or other physical process: B1 = 5 µg/kg;
Total AF = 10 µg/kg
Cereals and other products processed for direct intake or as food ingredient: B1 = 2 µg/kg;
Total AF = 4 µg/kg
Raw milk or for milk products, and heat treated milk: Aflatoxin M1 = 0.05 ng/L
Spices and alike: Aflatoxina B1 = 5 µg/kg; AF Totais = 10 µg/kg
Raw cereals: Ochratoxin A = 5 µg/kg
Cereal products intended for direct human consumption: Ochratoxin A = 3 µg/kg
Dried vine fruits: Ochratoxin A = 10 µg/kg
Baby foods: patulin = 10 µg/kg

Raw materials for rations: Aflatoxin B1 = 50 µg/kg; peanuts products, copra, palm, cottonseeds, babassu, corn: 20 µg/kg
Rations: Aflatoxin B1 = 10 µg/kg;
Complete rations for swine and birds, except young animals: B1 = 20 µg/kg;
Complete rations for fattening cattle, sheep, bovines, except young animals: B1 = 50 µg/kg
Complete rations for bullocks and lambs: B1 = 10 µg/kg
Complements of rations: B1 = 5 µg/kg; Complements of rations for pigs and birds: B1 = 30 µg/kg
Complements of rations for cattle, sheep and bovines, except animals in nursing, bullocks, lambs, kid goats: B1 = 50 µg/kg
Raw materials - peanuts products, copra, palm, cotton, babassu, corn = B1 = 200 µg/kg

EC recent legislation (January 28, 2003)

Additional legislation of each country:

GERMANY

Foods: B1 = 2 µg/kg; B1,B2,G1,G2 = 4 µg/kg
Preparations of enzymes for production of foods: B1,B2,G1,G2 = 0.05 µg/kg
Foods for children and young: B1,B2,G1,G2 = 0.05 µg/kg
Milk: M1 = 0.05 µg/kg; Foods for children and youngs: M1 = 0.01 µg/kg

BELGIUM

Peanuts: B1 = 5 µg/kg; Milk: M1 = 0.05 µg/kg

DENMARK

Peanuts and Products: Aflatoxin B1 = 2 µg/kg; B1,B2,G1,G2 = 4
Brazil nuts, dried fig B1 = 2 µg/kg; B1,B2,G1,G2 = 4 µg/kg;
Kidneys of swine: Ochratoxin A = 25 µg/kg; Cereals and products: Ochratoxin A = 5 µg/kg

SPAIN

All Foods: B1,B2,G1,G2 = 10µg/kg; B1 = 5 µg/kg

FRANCE

All Foods: Aflatoxin B1 = 10 µg/kg;
Peanuts, pistachio, almonds, oleaginous, infant foods: B1 = 1 µg/kg
Wheat bran: B1 = 10 µg/kg
Vegetable oils, cereals: B1 = 5 µg/kg apple
Juice (products): Patulin = 50 µg/kg
Cereals, vegetable oils: Zearalenona = 200 µg/kg
Cereals: Ocratoxina A = 5 µg/kg
Milk, powdered milk (calculations made in the reconstituted product): Aflatoxin M1 = 0.05 µg/kg
Milk, powdered milk, ( children younger than 3 years (calc. in the reconstituted product):
M1 = 0.03 µg/kg

GREECE

Peanuts, hazelnuts, nuts, cashew nut, pistachio, almonds, pumpkin seeds, sunflower seeds,
pinus seeds, apricot seeds, corn, dry fig, dry apricot, prune, dates, grape raisins:
B1,B2,G1,G2 = 10 µg/kg; B1 = 5 µg/kg raw
Coffee, apple juice, apple products: Ochratoxin A = 20 µg/kg; Patulin = 50 µg/kg

IRELAND

All foods: B1,B2,G1,G2 = 30 µg/kg; B1 = 5 µg/kg

ITALY

Foods: Aflatoxin B1 = 5 µg/kg; B1+B2+G1+G2 = 10 µg/kg
Dry figs: Aflatoxin B1 = 5 µg/kg; B1+B2+G1+G2 = 10 µg/kg
Spices: Aflatoxin B1 = 20 µg/kg; B1+B2+G1+G2 = 40 µg/kg
Coffee: Ochratoxin A = 8 µg/kg; café roasted and soluble = 4 µg/kg
**LUXEMBURG**

Peanuts and their products: B1 = 5 µg/kg

**NORWAY**

All Foods: B1,B2,G1,G2 = 5 µg/kg
Concentrated apple juice: Patulin = 50 µg/kg

**PORTUGAL**

All Foods: B1 = 20 µg/kg
Peanuts: B1 = 25 µg/kg; Infant foods: B1 = 5 µg/kg

**SWEDEN**

All Foods: B1,B2,G1,G2 = 5 µg/kg
Berries, fruits, juices: Patulin = 50 µg/kg
Products of liquid milk: M1 = 0.05 µg/kg
Ingredients for ration: B1 = 50 µg/kg
Ingredients for ration for dairy cattle: M1 = 10 µg/kg
Grains of cereals and forages as ingredient for dairy cattle’s ration: B1 = 1 µg/kg
Mixed Rations (except forages) for dairy cattle: B1 = 3 µg/kg
Complete rations: B1 = 10 µg/kg
Complete rations for fattening cattle, sheep, bovid, except dairy cattle and young animals:
B1 = 50 µg/kg
Complete rations for pigs and birds, except young animals: B1 = 20 µg/kg
Complete rations for dairy cattle, including forages: B1 = 1.5 µg/kg
Complete rations for birds: Ochratoxin A = 200 µg/kg
Complete rations for pigs: Ochratoxin A = 100 µg/kg

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**EUROPE: Other countries**

**BOSNIA AND HERZEGOVINA**

Wheat, corn rice and cereals: B1,G1 = 1 µg/kg
Beans: B1,G1 = 5 µg/kg

**BULGARY**

Peanuts and products, cocoa kernels, cocoa butter, cocoa powder: B1,B2,G1,G2 = 5 µg/kg
Grains and products, cereals and products: B1,B2,G1,G2 = 2.5 µg/kg
AFM1: Fluid milk products = 0.5 µg/kg; Powdered milk = 0.1 µg/kg;
Powdered milk for diets and infant foods = 0 µg/kg
Cheese and similar foods = 0.5 µg/kg
FINLAND

All foods: B1,B2,G1,G2 = 5 µg/kg
All foods: Patulin = 50 µg/kg

HUNGARY

All foods: B1 = 5 µg/kg
Peanuts (kernels): B1 = 30 µg/kg
Preserved foods: All mycotoxins: 0 µg/kg
Peanuts (sic): B1,B2,G1,G2 = 5 µg/kg

MACEDONIA (1981)

Wheat, corn and rice: B1,G1 = 1 µg/kg
Beans: B1,G1 = 5 µg/kg

POLAND

All foods: B1 = 0 µg/kg
Rations, ingredients for rations, Complete rations for cattle, sheep and goats: B1 = 50 µg/kg

TCHECH REPUBLIC

All foods: B1 = 5 µg/kg; B2,G1,G2 = 10 µg/kg
Infant foods: B1 = 1 µg/kg; B2,G1,G2 = 2 µg/kg
All foods: Patulin = 50 µg/kg; Ochratoxin A = 20 µg/kg
Infant foods: Patulin = 30 µg/kg; Ochratoxin A = 5 µg/kg
Infant foods: Patulin = 20 µg/kg; Ochratoxin A = 1 µg/kg
Milk: M1 = 0.5 µg/kg
Any other product: M1 = 5 µg/kg
Foods for children and infants: M1 = 1 µg/kg
Infant foods, milk based: M1 = 0.1 µg/kg; B1 = 0.1; B2,G1,G2 = 0.2 µg/kg

RUMANIA (1987)

All foods: B1 = 0 µg/kg; Patulin = 50 µg/kg; Ochratoxin A = 5 µg/kg; Zearalenone = 30 µg/kg
Milk and milk products: M1 = 0 µg/kg
Rations in general: Patulin = 30 µg/kg; Ochratoxin A = 5 µg/kg;
Deoxynivalenol = 5 µg/kg; Stachybotriotoxin = 0 µg/kg; Chetomin = 0 µg/kg

RUSSIA

Cereals, flowers and meals: B1 = 5 µg/kg
Zearalenone = 1000 µg/kg
T2-toxin = 100 µg/kg
Deoxynivalenol = 1000 µg/kg
Other foods: B1 = 5 µg/kg

**SERVIA (1981)**

Wheat, corn rice and cereals: B1,G1 = 1 µg/kg
Beans: B1,G1 = 5 µg/kg

**SWITZERLAND**

All foods (except corn, cereals and herbs): B1 = 1 µg/kg; B2,G1,G2 = 5 µg/kg
Corn, cereals: B1 = 2 µg/kg; B2,G1,G2 = 5 µg/kg
Herbs: B1 = 5 µg/kg; B2,G1,G2 = 5 µg/kg
Infant foods: B1,B2,G1,G2 = 0.01 µg/kg
Cereals: Ochratoxin = 2 µg/kg
Corn and products: Fumonisins B1+B2 = 1000 µg/kg
Fruit juice: Patulina = 50 µg/kg
Milk and products: M1 = 0.05 µg/kg
Milk whey and products: M1 = 0.025
Cheese: M1 = 0.25 µg/kg
Butter, infant foods: M1 = 0.02 µg/kg

**ALL OTHER COUNTRIES**

**SOUTH AFRICA**

All foods: B1 = 5 µg/kg; B1,B2,G1,G2 = 10 µg/kg

**AUSTRALIA**

All foods: B1,B2,G1,G2 = 5 µg/kg; Phomopsin = 5 µg/kg
Peanut butter, nuts in general = 15 µg/kg

**CHINA**

Rice, edible oils: B1 = 10 µg/kg
Wheat, barley, oats, beans, sorghum, other grains and fermented foods: B1 = 20 µg/kg
Fluid milk and milk products (calculated on fluid milk basis): B1 = 0.5 µg/kg
Ration for chickens: B1 = 10 µg/kg
Ration for laying hens and fattening swine: B1 = 20 µg/kg
Corn, peanut flower and other peanut by-products (for rations): B1 = 50 µg/kg

**CYPRUS (1992)**
Cereals, legumes, dried fruits, sesame and foods produced exclusively with these products, divers seeds, poppy seeds, seeds utilized in bakery products and confectionery:

\[
B_1, B_2, G_1, G_2 = 5 \, \mu g/kg
\]

Milk and milk products: all mycotoxins: 0.5 \, \mu g/kg

**IVORY COAST (1997)**

Ingredients for rations: \(B_1, B_2, G_1, G_2 = 100 \, \mu g/kg\)

Rations, complete: \(B_1, B_2, G_1, G_2 = 10 \, \mu g/kg\)

Rations, complete for swine, avians (except young animals and ducks): \(B_1, B_2, G_1, G_2 = 38 \, \mu g/kg\)

Rations, complete for beef cattle, sheep and goats: \(B_1, B_2, G_1, G_2 = 75 \, \mu g/kg\)

Rations, complete for lactating cows: \(B_1, B_2, G_1, G_2 = 50 \, \mu g/kg\)

**EGYPT**

Peanuts and products, oil seeds and products: \(B_1, B_2, G_1, G_2 = 10 \, \mu g/kg\)

Cereals and products: \(B_1 = 5 \, \mu g/kg\)

Corn: \(B_1, B_2, G_1, G_2 = 20 \, \mu g/kg; B_1 = 10 \, \mu g/kg\)

Starch and by-products: \(B_1, B_2, G_1, G_2 = 0 \, \mu g/kg\)

Milk and dairy products: \(G_1, G_2, M_1, M_2 = 0 \, \mu g/kg\)

Foods for animals and birds: \(B_1, B_2, G_1, G_2 = 20 \, \mu g/kg; B_1 = 10 \, \mu g/kg\)

**PHILIPPINES**

Nuts and their products: \(B_1, B_2, G_1, G_2 = 20 \, \mu g/kg\)

Rations for avians: \(B_1, B_2, G_1, G_2 = 20 \, \mu g/kg\)

Rations for finishing beef cattle: \(B_1, B_2, G_1, G_2 = 50 \, \mu g/kg\)

**HONG KONG**

Foods, in general: \(B_1, B_2, G_1, G_2, M_1, M_2, \text{Aflatoxin P1}, \text{Aflatoxicol} = 15 \, \mu g/kg\)

Peanuts and Products: \(B_1, B_2, G_1, G_2, M_1, M_2, \text{Aflatoxin P1}, \text{Aflatoxicol} = 20 \, \mu g/kg\)

**INDIA (1987)**

All foods: \(B_1 = 30 \, \mu g/kg\)

Peanuts flower (for export): \(B_1 = 120 \, \mu g/kg\)

**INDONESIA**

Copa in rations for cows, swine, ducks and sheep: \(B_1, B_2, G_1, G_2 = 1000 \, \mu g/kg\)

Peanut, sesame and colza flowers: \(B_1, B_2, G_1, G_2 = 200 \, \mu g/kg\)

Cassava in chicken rations: \(B_1, B_2, G_1, G_2 = 200 \, \mu g/kg\)

**ISRAEL**

Nuts, peanuts, corn meal, figs and products: \(B_1, B_2, G_1, G_2 = 15 \, \mu g/kg; B_1 = 5 \, \mu g/kg\)

Apple juice: Patulin = 50 \, \mu g/kg
Cereals and legumes and their products: Ochratoxin A = 50 µg/kg
Grains for rations: B1 = 20 µg/kg; Ochratoxin A = 300 µg/kg; T-2 Toxin = 100 µg/kg;
Diacetoxyscirpenol = 1000 µg/kg

JAPAN

Foods: Aflatoxin B1 = 10 µg/kg
Rations: Aflatoxin B1 = 1000 µg/kg

JORDANIA (1991)

Almonds, cereals, corn, peanuts, pistachio, pine nuts, rice and rations: B1,B2,G1,G2 = 30
µg/kg; B1 = 15 µg/kg

MALAWI (1987)

Peanuts (for export): B1 = 5 µg/kg

MALAYSIA (1987)

All foods: B1,B2,G1,G2 = 35 µg/kg

MAURITIUS (1987)

All foods: B1,B2,G1,G2,M1,M2 = 10 µg/kg; B1 = 5 µg/kg
Peanuts: B1,B2,G1,G2 = 15 µg/kg; B1 = 5 µg/kg

NIGERIA (1987)

All foods: B1 = 5 µg/kg
Infant foods: B1 = 0 µg/kg
Fluid milk: M1 = 1 µg/kg
Rations: B1 = 50 µg/kg

NEW ZEALAND (1987)

All foods: B1,B2,G1,G2 = 5 µg/kg
Peanut butter, peanut kernels, nuts: B1,B2,G1,G2 = 15 µg/kg

OMAN (1987)

Rations, complete: B1 = 10 µg/kg
Completes rations for birds and avian: B1 = 20 µg/kg

KENYA (1981)

Peanuts and products; vegetal oils: B1,B2,G1,G2 = 20 µg/kg

SENEGAL (1987)
Peanuts products for ration: B1 = 50 µg/kg
Peanuts products as ingredient for ration: 300 µg/kg

**SINGAPORE (1987)**

All foods: B1,B2,G1,G2 = 0 µg/kg

**SRI LANKA**

Foods in general: All aflatoxins = 30 µg/kg
Baby foods (till 3 years old): All aflatoxins = 1 µg/kg

**ZIMBABWE**

Rice flour: B1 = 5 µg/kg; G1 = 4 µg/kg
Peanuts, corn, sorghum: B1 = 5 µg/kg; G1 = 4 µg/kg
Rations for avians: B1,G1 = 10 µg/kg