



**RED MEAT AND
PROCESSED MEAT**

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**IARC MONOGRAPHS
ON THE EVALUATION
OF CARCINOGENIC RISKS
TO HUMANS**

LIST OF ABBREVIATIONS

| | |
|---------|---|
| 4-HNE | 4-hydroxynonenal |
| 8-OHdG | 8-hydroxy-2'-deoxyguanosine |
| AARP | American Association of Retired Persons |
| ACF | aberrant crypt foci |
| ADI | acceptable daily intake |
| AGEP | advanced glycation end product |
| AHS | Agricultural Health Study |
| AIN | American Institute of Nutrition |
| AOCS | Australian Ovarian Cancer Study |
| ATBC | Alpha-Tocopherol, Beta-Carotene Cancer Prevention |
| ATNC | apparent total <i>N</i> -nitroso compounds |
| AαC | 2-amino-9 <i>H</i> -pyrido[2,3- <i>b</i>]indole |
| BaP | benzo[<i>a</i>]pyrene |
| BCDDP | Breast Cancer Detection Demonstration Project |
| BCLL | B-cell chronic lymphocytic leukaemia |
| BFR | brominated flame retardant |
| BMI | body mass index |
| BOP | <i>N</i> -nitrosobis(2-oxopropyl)amine |
| bw | body weight |
| BWHS | Black Women's Health Study |
| CBCS | Collaborative Breast Cancer Study |
| CCFR | Colon Cancer Family Registry |
| CHARRED | Computerized Heterocyclic Amines Resource for Research in Epidemiology of Disease |
| CI | confidence interval |
| CLL | chronic lymphocytic leukaemia |
| CNBSS | Canadian National Breast Screening Study |
| CPS-II | Cancer Prevention Study II |
| CSFII | Continuing Survey of Food Intakes by Individuals |
| CYP | cytochrome P450 |
| DBCg | Danish Breast Cancer Cooperative Group |
| DCPP | Pooling Project of Prospective Studies of Diet and Cancer |
| dG | deoxyguanosine |
| DHN-MA | 1,4-dihydroxynonane mercapturic acid |

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|------------|---|
| DHQ | Diet History Questionnaire |
| DiMeIQx | 2-amino-3,4,8-trimethylimidazo[4,5- <i>f</i>]quinoxaline |
| DLBCL | diffuse large B-cell lymphoma |
| DMH | 1,2-dimethylhydrazine |
| DNA | deoxyribonucleic acid |
| EAC | oesophageal adenocarcinoma |
| EFSA | European Food Safety Authority |
| EGFR | epidermal growth factor receptor |
| EPIC | European Prospective Investigation into Cancer and Nutrition |
| ER | estrogen receptor |
| ESCC | oesophageal squamous cell carcinoma |
| EU | European Union |
| FABP2 | fatty acid binding protein 2 |
| FAO | Food and Agriculture Organization of the United Nations |
| FAOSTAT | Food and Agriculture Organization of the United Nations Statistical Databases |
| FDA | Food and Drug Administration |
| FFQ | food frequency questionnaire |
| GCA | gastric cardia cancer |
| GC-MS | gas chromatography-mass spectrometry |
| GECCO | Genetics and Epidemiology of Colorectal Cancer Consortium |
| GEMS | Global Environment Monitoring System |
| Glu-P-2 | 2-aminodipyrido[1,2- <i>a</i> :3',2'- <i>d</i>]imidazole |
| GNCA | gastric non-cardia cancer |
| HAA | heterocyclic aromatic amine |
| HACCP | hazard analysis and critical control point |
| HAMSB | butyrylated high-amylose maize starch |
| HBCD | hexabromocyclododecane |
| HHHQ | Health Habits and History Questionnaire |
| HIV | human immunodeficiency virus |
| HPFS | Health Professionals Follow-Up Study |
| HR | hazard ratio |
| IARC | International Agency for Research on Cancer |
| ICD | International Classification of Diseases |
| ICD-O | International Classification of Diseases for Oncology |
| IgQx | 2-amino-1-methylimidazo[4,5- <i>g</i>]quinoxaline |
| IQ | 2-amino-3-methylimidazo[4,5- <i>f</i>]quinoline |
| IWHS | Iowa Women's Health Study |
| JACC Study | Japan Collaborative Cohort Study for Evaluation of Cancer |
| JPHC Study | Japan Public Health Center-based Prospective Study |
| KCl | potassium chloride |
| LC-MS | liquid chromatography-mass spectrometry |
| LC-MS/MS | liquid chromatography-tandem mass spectrometry |
| LSS | Life Span Study |
| MCCS | Melbourne Collaborative Cohort Study |
| MDA | malondialdehyde |
| MDF | mucin-depleted foci |
| MeAαC | 2-amino-3-methyl-9 <i>H</i> -pyrido[2,3- <i>b</i>]indole |
| MeIQ | 2-amino-3,4-dimethylimidazo[4,5- <i>f</i>]quinoline |
| MeIQx | 2-amino-3,8-dimethylimidazo[4,5- <i>f</i>]quinoxaline |
| MMR | mismatch repair |

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|---------------------|--|
| MRL | maximum residue limit |
| MSI | microsatellite instability |
| MUFA | monounsaturated fatty acid |
| NaCl | sodium chloride |
| NAT | <i>N</i> -acetyltransferase |
| NCI | National Cancer Institute |
| NDBA | <i>N</i> -nitrosodi- <i>n</i> -butylamine |
| NDEA | <i>N</i> -nitrosodiethylamine |
| NDMA | <i>N</i> -nitrosodimethylamine |
| Neu5Ac | <i>N</i> -acetylneuraminic acid |
| Neu5Gc | <i>N</i> -glycolylneuraminic acid |
| NHPRO | <i>N</i> -nitrosohydroxyproline |
| NHS | Nurses' Health Study |
| NIH | National Institutes of Health |
| NLCS | Netherlands Cohort Study |
| NLCS-MIC | Netherlands Cohort Study – Meat Investigation Cohort |
| NMEA | <i>N</i> -nitrosomethylethylamine |
| NMOR | <i>N</i> -nitrosomorpholine |
| N-NO-IQ | 2-nitrosoamino-3-methylimidazo[4,5- <i>f</i>]quinoline |
| N-NO-MeIQx | 2-nitrosoamino-3,8-dimethylimidazo[4,5- <i>f</i>]quinoxaline |
| NO | nitric oxide |
| NOC | <i>N</i> -nitroso compound |
| N-OH-IQ | 2-hydroxyamino-3-methylimidazo[4,5- <i>f</i>]quinoline |
| N-OH-MeIQx | 2-hydroxyamino-3,8-dimethylimidazo[4,5- <i>f</i>]quinoxaline |
| NPIP | <i>N</i> -nitrosopiperidine |
| NPRO | <i>N</i> -nitrosoproline |
| NPYR | <i>N</i> -nitrosopyrrolidine |
| NutriCoDE | Global Burden of Diseases Nutrition and Chronic Diseases Expert Group |
| NYPR | <i>N</i> -nitrosopyrrolidine |
| NYUWHS | New York University Women's Health Study |
| O ⁶ -CMG | O ⁶ -carboxymethyl guanine |
| O ⁶ -MeG | O ⁶ -methylguanine |
| OR | odds ratio |
| PAH | polycyclic aromatic hydrocarbon |
| PARP | poly(ADP-ribose) polymerase |
| PBB | polybrominated biphenyl |
| PBDE | polybrominated diphenyl ether |
| PCB | polychlorinated biphenyl |
| PCDD | polychlorinated dibenzodioxin |
| PCDF | polychlorinated dibenzofuran |
| PCNA | proliferating cell nuclear antigen |
| PhIP | 2-amino-1-methyl-6-phenylimidazo[4,5- <i>b</i>]pyridine |
| PhIP-M1 | 7-hydroxy-5-methyl-3-phenyl-6,7,8,9,-tetrahydropyridol[3',2':4,5]imidazo[1,2- <i>a</i>]pyrimidin-5-ium chloride |
| PHS | Physicians' Health Study |
| PLCO | Prostate, Lung, Colorectal and Ovarian |
| PUFA | polyunsaturated fatty acid |
| PR | progesterone receptor |
| PSA | prostate-specific antigen |
| PUFA | polyunsaturated fatty acid |

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|-----------|--|
| RCC | renal cell carcinoma |
| RNA | ribonucleic acid |
| ROS | reactive oxygen species |
| RR | relative risk |
| SCHS | Singapore Chinese Health Study |
| SD | standard deviation |
| SEER | Surveillance, Epidemiology, and End Results |
| SFA | saturated fatty acid |
| SLL | small lymphocytic lymphoma |
| SMC | Swedish Mammography Cohort |
| SMHS | Shanghai Men's Health Study |
| SQFFQ | semiquantitative food frequency questionnaire |
| SWH | Survey of Women's Health |
| SWHS | Shanghai Women's Health Study |
| TBARS | thiobarbituric acid reactive substances |
| TBBPA | tetrabromobisphenol A |
| TCPS | Tennessee Colorectal Polyp Study |
| TQ-MS | triple quadrupole-mass spectrometry |
| Trp-P-1 | 3-amino-1,4-dimethyl-5 <i>H</i> -pyrido[4,3- <i>b</i>]indole |
| Trp-P-2 | 3-amino-1-methyl-5 <i>H</i> -pyrido[4,3- <i>b</i>]indole |
| TUNEL | dUTP nick end labelling |
| UCP2 | uncoupling protein 2 |
| UGT | UDP-glucuronosyltransferase |
| UKWCS | United Kingdom Women's Cohort Study |
| WCRF/AICR | World Cancer Research Fund/American Institute of Cancer Research |
| WHO | World Health Organization |
| WHS | Women's Health Study |
| XME | xenobiotic-metabolizing enzyme |
| XPD | xeroderma pigmentosum group D |