IARC Again Asked to Review RF Cancer Risk, Just Not Right Away

Same Advice Was Given in 2019

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An advisory group to the International Agency for Research on Cancer (IARC) has —once again— recommended a new assessment of the cancer risk posed by RF radiation. RF is one of about a hundred agents listed as “high priority” for evaluation over the next five years, 2025-2029.

The panel, made up of 28 independent scientists from 22 countries, met last month in Lyon, France (IARC’s hometown), to consider more than 200 agents that had been nominated for evaluation or reevaluation. The panel’s recommendations were announced yesterday in the news section of *Lancet Oncology* and an IARC press release.

Others on the high-priority list include acetaminophen (Tylenol), methamphetamine, bisphenols, hair dyes, the hepatitis D virus and smoking cannabis. The full list is below.

RF was deemed to be less urgent than most of the others on the list. In a footnote, the panel advised that it and a small number of the other high-priority agents (for instance, GLP-1 analogs and cannabis smoking) should not be reviewed until the second half of the five-year period, that is, not until late 2027, at the earliest.

Even so, IARC cannot possibly evaluate all those nominated as high priority. Each review is long and expensive: A panel of experts must prepare a comprehensive analysis which is later published as a Monograph. When completed, a Monograph typically runs hundreds of pages and includes a vast number of references. The agency can only address a small proportion of the recommended agents over a five-year period.

Elisabete Weiderpass, the director of IARC, and her staff will decide which ones make the cut.

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In May 2011, an IARC committee evaluated RF at an eight-day meeting in Lyon and found the radiation to be a possible human carcinogen. (IARC's RF Monograph was published in 2013.)

Déjà Vu

In 2019, this same advisory panel (albeit with a different membership) put RF on the list of high priority agents for reevaluation during 2020-2024. Here again, the panel asked that a new review wait until the second half of the period. This was said to be a political compromise among the panel members, as is likely the case for the new list.

But the reevaluation never happened.

Weiderpass, who became IARC director in 2019, has been under pressure to green light a new review of RF after a long-term animal study carried out by the U.S. National Toxicology Program (NTP) showed *clear evidence* that RF causes cancer. The 2011 "possible" cancer risk designation was based on epidemiological studies. The new animal data led some to argue that IARC should now raise the RF risk level to "probable" or higher.

In late 2022, Weiderpass floated the idea of preparing a new RF Monograph before the end of this year. But instead, she kicked the can down the road. She said that she wanted to wait for the results of a partial replication of the NTP study under way in Korea and Japan.

None of the members of IARC's advisory panel has done much work —if any— on RF or other types of non-ionizing radiation. The only participant at the panel's March meeting who is well known within the RF community is Joachim Schüz, the head of IARC's environmental epidemiology branch. (He attended as part of the WHO-IARC secretariat.) For more than a decade, Schüz has argued that IARC's 2011 decision on RF was a mistake. He maintains that the data did not support the possible cancer risk designation.

A more detailed report on the panel's recommendations will be published later.

	Rationale
Agents not previously evaluated by *IARC Monographs*	
Disinfection byproducts in water, including haloacetic acids; sleep disruption; hair straightening products; metalworking fluids; obesity*; platinum-based chemotherapies as mechanistic class†; dibutyl phthalate; nitrogen dioxide‡; artificial light at night‡; sugar-sweetened beverage consumption‡; GLP-1 analogues‡; Fonofos‡	Relevant human cancer, animal cancer, and mechanistic evidence
Fusobacterium nucleatum; human cytomegalovirus; sedentary behaviour; ultrafine; ultraprocessed food consumption; anthracyclines as mechanistic class†; BRAF inhibitors—dabrafenib, encorafenib, vemurafenib; epirubicin; tetracycline; tofacitinib and other Janus kinase inhibitors; perfluorohexanesulfonic acid; cannabis smoking‡; ultrafine particles‡; assisted reproductive techniques‡; chlorpyrifos‡	Relevant human cancer and mechanistic evidence
Electronic nicotine delivery systems; estragole; carbadox; alachlor; cyfluthrin; cypermethrin; mancozeb; neonicotinoid insecticides; tebuconazole; vinclozolin; bisphenol A; bisphenol S; bisphenol F; 2,3-butanedione; carbon disulfide; diisononyl phthalate; glycidamide; hexafluoropropylene oxide dimer acid; methanol; ozone; pentabromodiphenyl ethers; triclosan; zearalenone‡	Relevant animal cancer and mechanistic evidence
Hepatitis D virus; *Salmonella typhi*; taconite; terbufos‡	Relevant human cancer evidence
Metyltetraprole; proquinazid; butyraldehyde; chlorinated paraffins; tris(chloropropyl)phosphate	Relevant animal cancer evidence
Methamphetamine; Congo red; cumyl hydroperoxide; 2,4-dihydroxybenzophenone; parabens; electronic waste work‡; polyhexamethyleneguanidine‡	Relevant mechanistic evidence
Agents previously evaluated by *IARC Monographs*§	
Hair colouring products (personal use of); coal dust; paracetamol (acetaminophen); textured implants (breast and buttock); carbaryl; ethylenedithiocarbamates; permethrin; pyrethrins and pyrethroids	New human cancer, animal cancer, and mechanistic evidence to warrant re-evaluation of the classification
Non-ionising radiation (radiofrequency)‡	New human cancer and animal cancer evidence to warrant re-evaluation of the classification
Human papillomavirus β; *Opisthorchis felineus*; indoor combustion of biomass; textile manufacturing industry work; inorganic lead compounds; daunorubicin; doxorubicin; methotrexate; atrazine and other triazine pesticides; acetaldehyde; acrylamide; Merkel cell polyomavirus‡; clomiphene citrate‡; progestogen-only contraceptives‡; chlordecone‡	New human cancer and mechanistic evidence to warrant re-evaluation of the classification
Multiwalled carbon nanotubes; butyl benzyl phthalate; 5-nitro-*o*-toluidine; 4-nitrotoluene; *p*-phenylenediamine	New animal cancer and mechanistic evidence to warrant re-evaluation of the classification
Metallic nickel; very hot beverages and food¶; carbon tetrachloride‡; tetrachloroethylene‡	New human cancer evidence to warrant re-evaluation of the classification
Piperonyl butoxide	New animal cancer evidence to warrant re-evaluation of the classification
Schistosoma japonicum; *Schistosoma mansoni*; patulin; safrole; anaesthetics, volatile—isoflurane, sevoflurane, and desflurane; malathion; bromate compounds; 3,3□-dimethoxybenzidine; 3,3□-dimethylbenzidine; isoprene; fluoranthene‡	New mechanistic evidence to warrant re-evaluation of the classification
Helicobacter pylori‡; aflatoxins‡; outdoor air pollution‡; tobacco smoking and second-hand smoke‡; silica dust‡; asbestos‡; hormone replacement therapy‡; radon and its decay products‡; ethylene oxide‡; formaldehyde*	Group 1 carcinogen with evidence for new cancer sites (see section 3 of the Preamble to the *IARC Monographs*‡)

Evidence of human exposure was identified for all agents. Agents are ordered by readiness for evaluation and then by type (infectious, biotoxins, complex exposures, occupations, particles, fibres, metals, physical agents, nutritional agents, pharmaceuticals, pesticides, other chemicals). *A minority of the Advisory Group considered that obesity is not an exogenous agent and therefore should not be evaluated. †Advised to evaluate each pharmaceutical individually in the same volume. ‡Advised to conduct in latter half of 5-year period. §See https://monographs.iarc.who.int/list-of-classifications/ for current list of classifications. ¶Very hot food has not been previously evaluated.

Table 1: **Agents recommended for evaluation by the *IARC Monographs* with high priority**

Source: *Lancet Oncology,* April 12, 2024 (click to expand)

November 5, 2024

IARC Report on Recommended Monographs

IARC has posted the recommendations of its advisory group. The 590 pp. *Report of the Advisory Group to Recommend Priorities for the IARC Monographs during 2025–2029* may be downloaded here.

The section on RF radiation, which finds a new evaluation is a “high priority” and should be ready within five years, is on pp.171-173.

No priority was assigned to ELF EMFs. This section is on pp.169-171.

IARC, RF, cancer, Elisabete Weiderpass, Joachim Schüz, NTP Lite,

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