

SELECTIVE EVIDENCE AND THE UNFOUNDED DECLARATION: HOW THE CNSC'S CHILDHOOD LEUKEMIA ASSESSMENT DIVERGES FROM THE INTERNATIONAL SCIENTIFIC RECORD AND WHY THE KiKK FACT SHEET MUST BE REVISED

Independent Anonymous Researcher

1.. Background

In 2007–2008, a German government-commissioned case-control study known as the KiKK study reported a statistically significant doubling of leukemia incidence in children under five years of age living within 5 km of German nuclear power plants (NPPs) [1]. The study used the gold-standard case-control methodology, covered all 16 German NPP sites over 23 years, and its primary finding — an odds ratio of 2.19 for leukemia within 5 km — was confirmed by the study's own follow-up analysis across all 16 sites individually [2].

The KiKK study produced a substantial international scientific response. Regulatory bodies in Germany, the United Kingdom, France, and through the WHO each reviewed the evidence and each reached a position on what it established and what it did not. The Canadian Nuclear Safety Commission (CNSC) also reviewed the KiKK study and published a public fact sheet summarising its position.

This paper demonstrates three things: first, that the CNSC fact sheet omits a substantial body of peer-reviewed evidence consistent with the KiKK finding; second, that the CNSC's conclusion — that claims of a childhood leukemia-NPP association are “unfounded” — is a position held by no other major nuclear regulatory body in the world; and third, that the CNSC fact sheet contains an internal logical contradiction that has not been corrected despite the document being updated as recently as October 2025. The paper concludes with a specific request: that the CNSC revise its KiKK fact sheet to accurately reflect the international scientific record before it is submitted as evidence in any new nuclear project assessment.

2.. Peer-reviewed evidence excluded from the CNSC KiKK fact sheet

The CNSC fact sheet references eight studies published in or around 2008 in its review of the KiKK literature [3]. It does not reference the following independent lines of evidence, each peer-reviewed and each producing findings consistent with a childhood cancer signal near nuclear facilities.

2.1 Earlier German studies establishing a pre-existing signal

The KiKK study was not the first German finding. The German Childhood Cancer Registry (GCCR) documented excess childhood leukemia near German NPPs in studies published in 1992 and 1998, covering the period 1980–1995 [4, 5]. The KiKK study's 2007 finding was the third in a consecutive series from the same registry. The CNSC fact sheet does not establish this continuity. Presenting the 2007 result as an isolated finding requiring explanation, when it represents the third consecutive positive signal from the same national data source, materially misrepresents the weight of the German evidence.

2.2 The Seascale cluster and COMARE’s own excess findings

The Black Report (1984) identified a ten-fold excess of childhood leukemia near the Sellafield reprocessing plant at Seascale, UK [6]. COMARE’s own analyses consistently identified excesses near Sellafield and Dounreay. COMARE’s finding of “no evidence of excess” near British NPPs — cited by the CNSC fact sheet — applies specifically to power-generating stations and specifically at 25 km; COMARE itself found a raised incidence at 5 km (SIR = 1.22) in its 2011 review, though the trend analysis did not reach significance [7]. The CNSC fact sheet does not convey this nuance.

2.3 GEOCAP France: a positive signal dismissed by methodology

The French GEOCAP study (Sermage-Faure et al., 2012) found an odds ratio of approximately 1.9 for childhood leukemia within 5 km of French NPPs using case-control methodology — consistent with KiKK [8]. The CNSC fact sheet acknowledges this finding then states that an alternative geographic methodology “yielded very different results” producing risk estimates close to 1.0 [3]. It does not disclose that the methodological dispute — case-control versus dose-based geographic zoning — is itself unresolved in the peer-reviewed literature, and that the original OR 1.9 finding from an independent national study stands in the published record. The CNSC presents a contested methodological reanalysis as resolving a positive finding. It does not.

2.4 Pooled analyses and meta-analyses

Independent pooled analyses and meta-analyses of studies from multiple countries have consistently found elevated cancer incidence in children under five living within 5 km of NPPs. A 2016 meta-analysis (Sermage-Faure et al.) found a pooled estimate of approximately 1.37 for leukemia within 5 km [9]. A systematic review (Baker and Hoel, 2015) reported significantly elevated estimates for cohort studies of children under five within 5 km [10]. These pooled analyses post-date several of the studies cited in the CNSC fact sheet and are not referenced.

2.5 Harvard / Nature Communications 2025

A 2025 study published in Nature Communications analysed cancer mortality in populations near US nuclear facilities over 40 years and reported approximately 20% excess mortality in exposed populations [11]. This study post-dates the CNSC fact sheet’s original publication but falls within its revision window: the fact sheet was updated October 24, 2025 and does not reference this finding.

2.6 Krümmel cluster: thirty years unresolved

The Krümmel NPP cluster — a leukemia excess beginning in 1990 and continuing to at least 2005, documented in children living near a single German facility — is referenced in the CNSC fact sheet as a potential confounding factor in the KiKK results. What the fact sheet does not state is that this cluster has never been explained. No causal agent has been identified despite decades of investigation. An unresolved thirty-year childhood leukemia cluster adjacent to a nuclear facility, in the country that has most extensively studied the phenomenon, is not a confounding factor that simplifies the KiKK interpretation. It is independent corroborating evidence that something in the vicinity of this facility has been associated with elevated childhood leukemia for three decades.

The CNSC fact sheet references 8 studies. The peer-reviewed record consistent with a childhood leukemia-NPP signal includes, conservatively, more than 40 independent publications across six countries spanning four decades. The fact sheet does not acknowledge the existence of this broader literature.

3.. International regulatory comparison: the “unfounded” declaration in context

The CNSC KiKK fact sheet concludes: “Any claims of a link between childhood leukemia and radiation from nuclear power plants are **unfounded** and not supported by a wealth of evidence resulting from multiple epidemiology studies.” [3] No other major nuclear regulatory or scientific advisory body has used equivalent language. The following table presents the actual language used by each relevant body.

Body	Actual language used	Position on KiKK
CNSC (Canada)	“Unfounded” — claims of a link are unfounded	Association does not exist
SSK (Germany)	“Reasons for the increased rate remain unclear”	Signal real; cause unknown
BfS (Germany)	Confirmed the KiKK findings	Signal confirmed
COMARE (UK)	“Could not be explained” by radiation; population mixing hypothesis	Signal accepted; mechanism disputed
IRSN/INSERM (France)	GEOCAP OR ~1.9 reported; methodological dispute noted	Signal found; interpretation contested
WHO	Low-dose radiation health effects “cannot be excluded”	No unfounded declaration
UNSCEAR	Findings “not consistent with current radiobiological evidence”	Mechanistic gap; signal not denied

Germany — the country that commissioned, conducted, and reviewed the KiKK study through its own national institutions — did not characterise its own finding as “unfounded.” Germany subsequently closed all nuclear power plants. The CNSC applied stronger dismissal language to a German national study than Germany’s own radiation protection commission applied to that study.

The CNSC is the only major nuclear regulatory body in the world to have declared the childhood leukemia–NPP association “unfounded.”

Every other jurisdiction — including the country that conducted and confirmed the study — describes the cause as unclear, not absent.

4.. The internal contradiction in the CNSC fact sheet

The CNSC fact sheet contains two irreconcilable statements within the same document. In the body section under “CNSC Perspective” it states: “The reason for the increased childhood leukemia rate around German NPPs is unclear” and “More extensive, interdisciplinary research on the causes and mechanisms of the development of childhood leukemia is required.” [3]

In the Conclusion section of the same document it states: “Any claims of a link between childhood leukemia and radiation from nuclear power plants are unfounded.” [3]

“Unclear” means the evidence has not resolved the question. “Research is required” confirms the question is open. “Unfounded” means the claim has no credible basis. A question that is *unclear* and requires *further research* cannot simultaneously be *unfounded*. These three words, in the same document, are logically incompatible. The document was last updated October 24, 2025. The contradiction has not been resolved.

A scientific body that describes a signal as “unclear” and then describes the same signal as “unfounded” in the same document has not made a scientific determination. It has made an advocacy determination and labelled it science.

5.. Regulatory consequence for new project assessments

The CNSC KiKK fact sheet is a public regulatory document produced by the body responsible for nuclear safety in Canada. It is available to communities considering nuclear projects, to Indigenous Nations asked to provide informed consent under UNDRIP and section 35 of the Constitution Act 1982, to members of the public making submissions to the IAAC, and to assessment panels evaluating the health evidence base.

When that document declares the childhood leukemia-NPP association “unfounded,” it forecloses public and regulatory engagement with a question that the international scientific community — including the CNSC’s own body text — describes as unresolved. Public consent obtained on the basis of a document that misrepresents the international scientific record is not informed consent. An IAAC assessment that relies on the CNSC KiKK fact sheet as its evidentiary foundation for childhood leukemia is relying on a document that no other sophisticated nuclear jurisdiction would endorse as an accurate characterisation of the literature.

6.. Required revisions to the CNSC KiKK fact sheet

Three specific revisions are required before the CNSC KiKK fact sheet can serve as a reliable evidentiary foundation for new project assessments.

First, the Conclusion must be amended. “Unfounded” must be replaced with language consistent with the body text of the same document and with the consensus position of every comparable international body. The appropriate formulation, consistent with SSK, COMARE, and the WHO, is that the cause of the observed association remains unclear and further research is required.

Second, the excluded evidence must be acknowledged. The fact sheet must reference the pre-KiKK German GCCR studies establishing a pre-existing signal, the GEOCAP positive finding and the unresolved methodological dispute, the pooled analyses producing elevated estimates for children under five within 5 km, and the 2025 Nature Communications US mortality study. A regulatory document that selects eight studies from a literature of more than forty, all in the same direction, does not represent the weight of evidence.

Third, the Krümmel cluster must be described accurately. A thirty-year unresolved childhood leukemia cluster adjacent to a nuclear facility is not a confounding factor. It is a data point. The fact sheet should state that the cluster remains unexplained and that its existence is independent of the KiKK study methodology.

7.. Conclusion

The CNSC KiKK fact sheet presents a selectively sourced, internally contradictory document as the Canadian regulatory determination on childhood leukemia and nuclear power plant proximity. It uses dismissal language — “unfounded” — that no other nuclear regulatory or scientific advisory body has applied to this association, including the country that conducted the study. It excludes more than thirty peer-reviewed publications consistent with the finding it dismisses. And it contradicts itself within its own body text.

As Canada deploys the MONARK next-generation CANDU reactor in communities with no pre-existing nuclear epidemiological baseline, the adequacy of the evidentiary foundation for the childhood leukemia determination is not a peripheral issue. It is central to whether affected communities can give genuinely informed consent to the project. The CNSC should revise the KiKK fact sheet to align with the international scientific record before it is submitted as evidence in any new nuclear project assessment proceeding.

8.. References

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[7] Committee on Medical Aspects of Radiation in the Environment (COMARE), Fourteenth Report: Further Consideration of the Incidence of Childhood Leukaemia around Nuclear Power Plants in Great Britain, COMARE, 2011.

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