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BOW VALLEY, ALBERTA · JUNE–JULY 2026

Wildfire smoke and the air indoors

When the air outside turns hazardous, what happens to the air inside **a continuing care facility in the Rockies**?

Alberta's Rocky Mountains, Canada

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Index: What smoke data means for a Care Home

Methodology: Six data sources, one situational analysis

This is a retrospective record of a wildfire smoke episode and its aftermath, not a forecast. Data from Reference Grade stations, low cost sensors and telemetry was gathered for analysis.

inBiot IAQ sensor system
INDOOR AQ - MEASURED

Indoor air, inside the building, every 15 minutes.

Bow Valley PurpleAir AQ
AMBIENT AQ - MEASURED

Outdoor air, a community network 1 km away.

Calgary CRAZ AQMS
AMBIENT AQ - MEASURED

The nearest official reference station, 100 km east.

CAMS / Open-Meteo
DISPERSION - MODELLED

The regional smoke field, hourly.

ECCC
INDEX - MEASURED

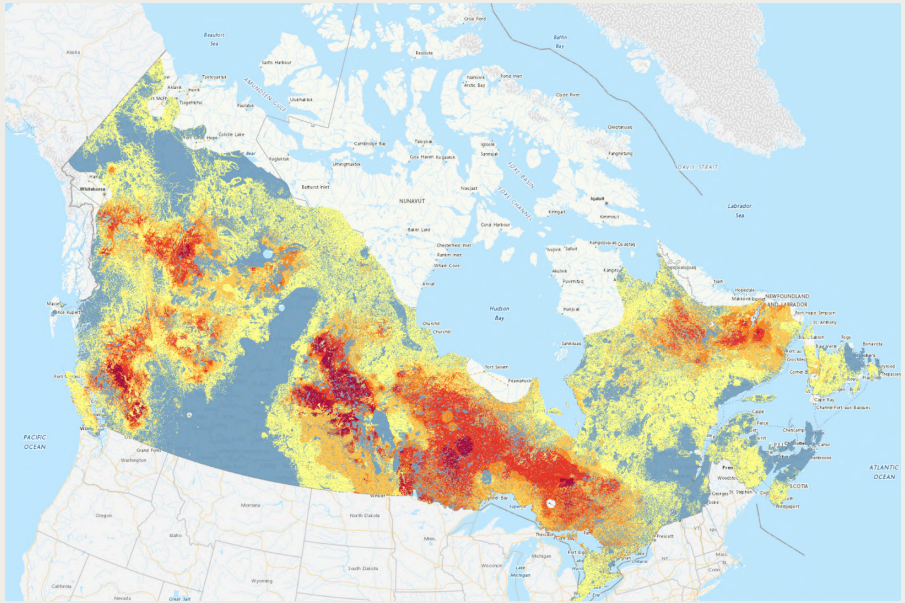
The health index and air quality warnings.

NOAA / CIRA
GEO - MEASURED

Satellite imagery of the source fires.

The Context: Alberta was bracing for a high-risk wildfire season this year

Canada's 2026 wildfire season started slowly but at high risk. By mid-May, over 100 fires were burning across eight provinces and two territories, and forecasters were already flagging Alberta, B.C. and the Northwest Territories for the highest risk as summer progressed.



Head Fire Intensity forecast, by 1 June 2026. Canada Wildland Fire Information System, *Natural Resources Canada / cwfis.cfs.nrcan.gc.ca.*

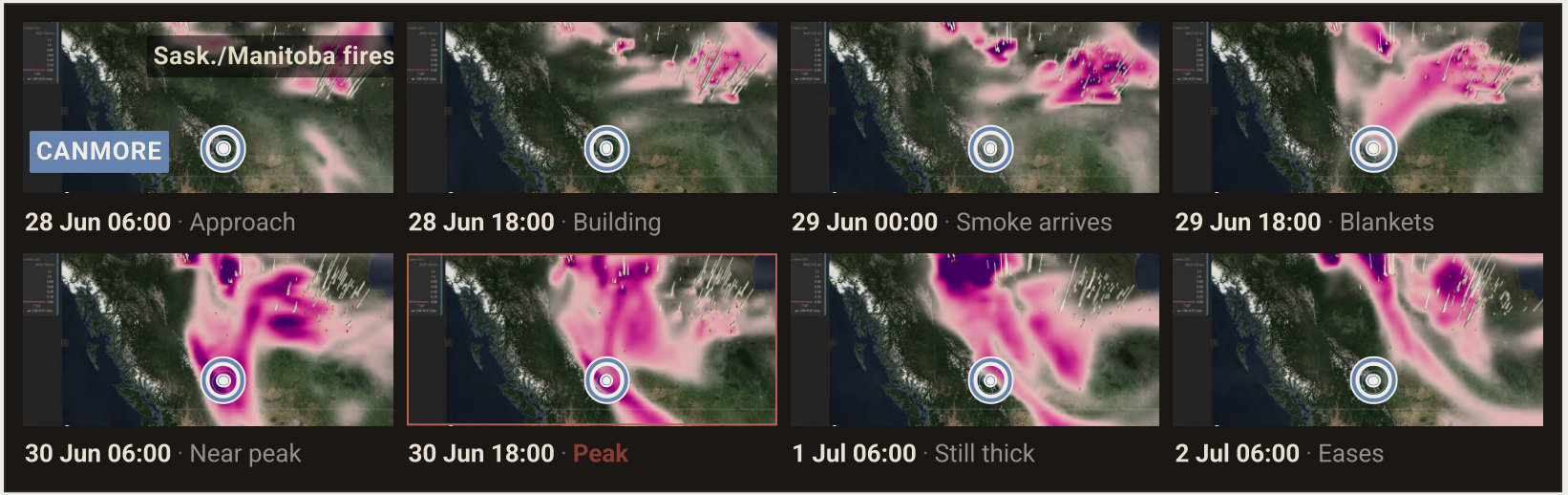
On 29 June, smoke settled over Canmore (Bow Valley) Wildfires are common in this area.

Residents in a continuing care facility could not simply leave. Staff needed to know, hour by hour, when it was safe to open a window or move someone outdoors — and when it was not.

A resident wears a mask outdoors during a smoke event. *Stock photo.*

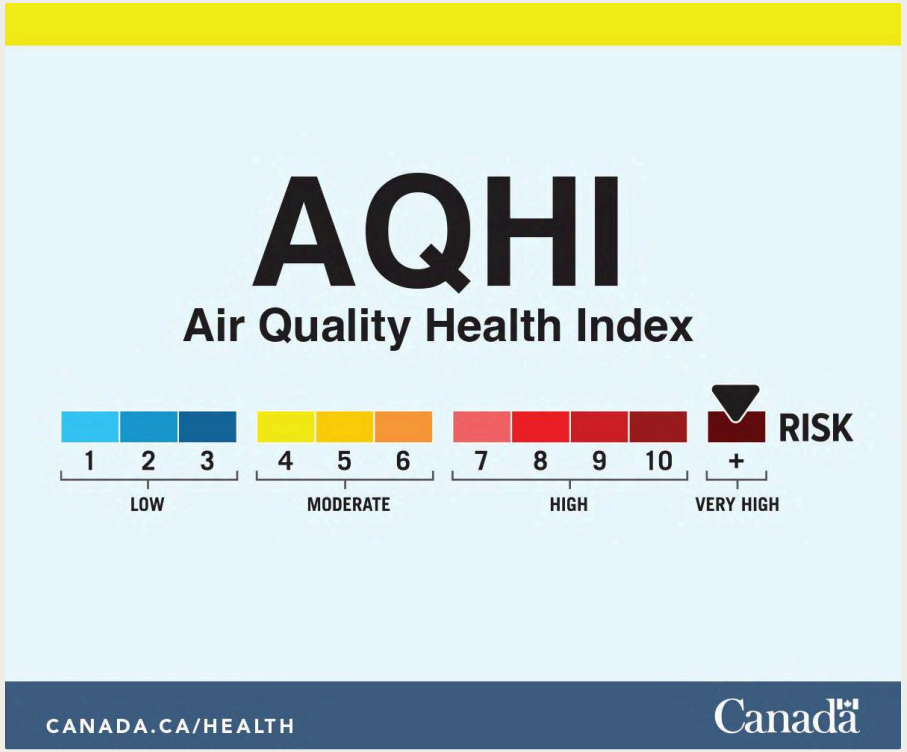
This time was different:
the model traced smoke from 800km away, North-East

Fires in northern Saskatchewan and Manitoba sent smoke south and west into the Alberta foothills, on the return flow of a departing low-pressure system. Source: CAMS / ECMWF Fire Emissions Watch.



On 29 June the official Air Quality Health Index (AQHI) reached "11"

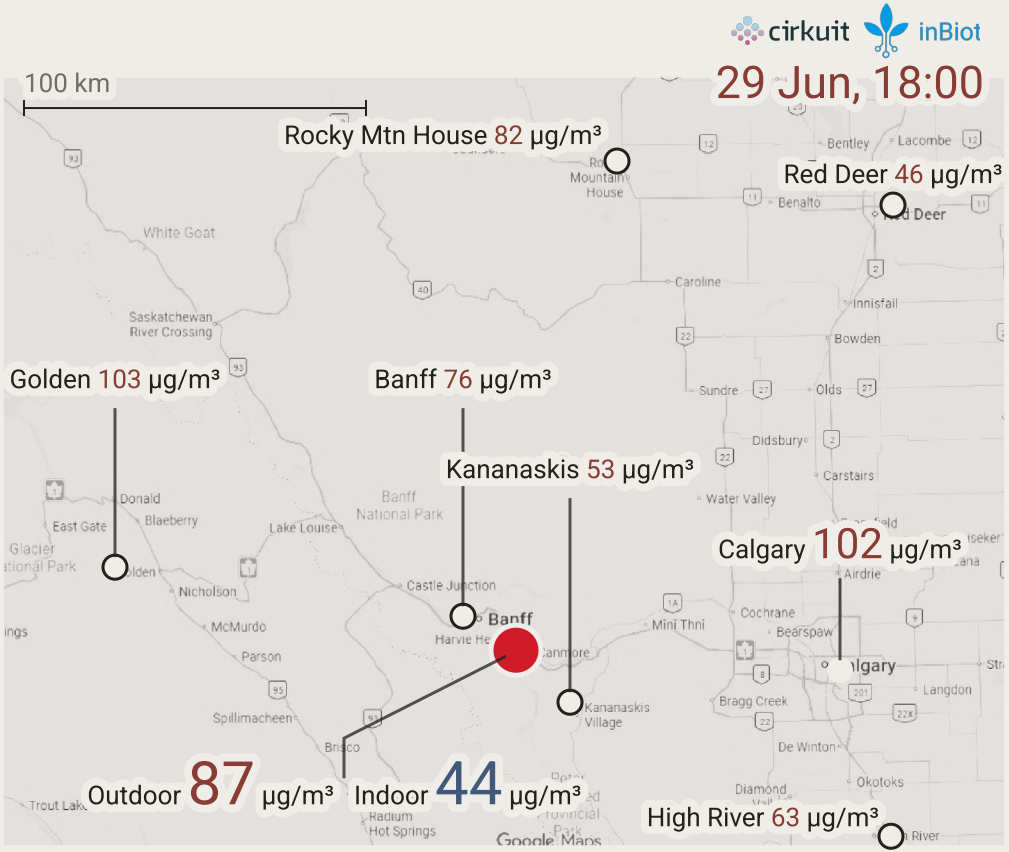
The Air Quality Health Index runs 1 to 10, then an open-ended band above. On 29 June it read 11, and Environment Canada advised at-risk people to stay indoors.



Reading from the Calgary reference stations, ~86 km east.

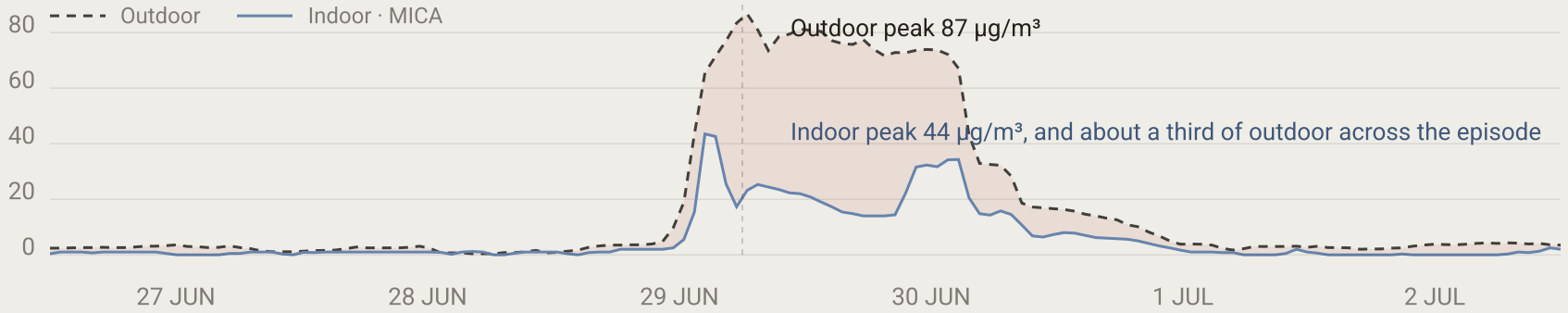
Smoke´s PM2.5 peaked and blanketed the whole region on Jun 30th

Smoke filled the valley. Staff checked the usual outdoor numbers and they were all bad — Calgary, Banff, Golden, here. Stay indoors was the advice. The question was whether that was enough, and nobody could answer it from a public map alone.



PM2.5 in µg/m³. Each figure measured at its 29 June peak.

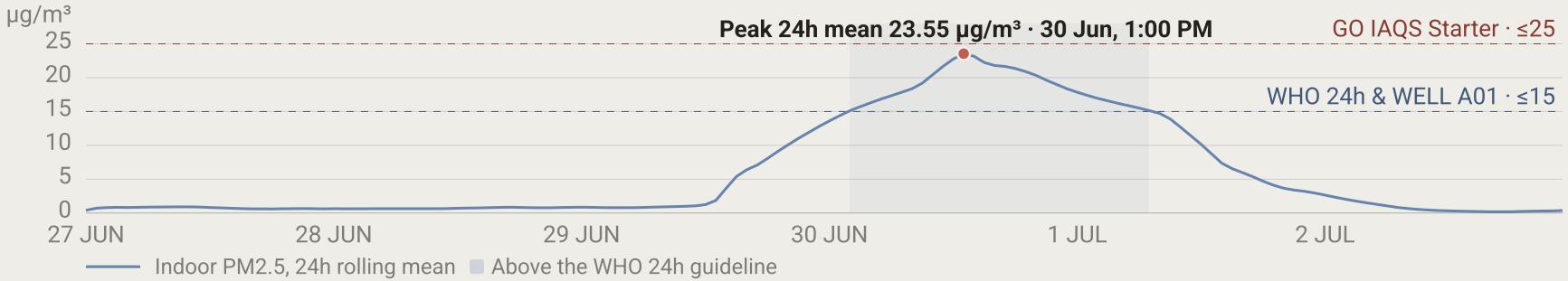
Outdor vs. Indoor: the building filtering system kept 2/3 of PMs out



Hourly PM2.5, local time. Indoor readings come from the MICA inside the building. Outdoor from the community network a kilometre away. The shaded band between the two is the smoke the building kept out.

ASHRAE Guideline 44-2024 ("Protecting Building Occupants from Smoke During Wildfire Events") puts typical indoor PM2.5 at 55–60% of outdoor with the building closed, in a documented range of 30–100%. **This building's actual 33.4% beats that typical range, toward the protective end.**

PM2.5 24h mean: A benchmark of international standards



COMPLIANCE WHO

79.2% of hours met the guideline

WHO's 15 µg/m³/24h guideline was missed for about a day and a half, starting the evening smoke arrived — the only limit here that also applies outdoors.

WHO Global Air Quality Guidelines, 2021

ILLUSTRATIVE WELL

85.5% of readings met the limit

WELL's certification uses the same 15 µg/m³ limit, requiring 90% compliance. This six-day window landed just under that bar — WELL normally measures a full month.

WELL Performance Verification Guidebook, 2025

VOLUNTARY GO IAQS

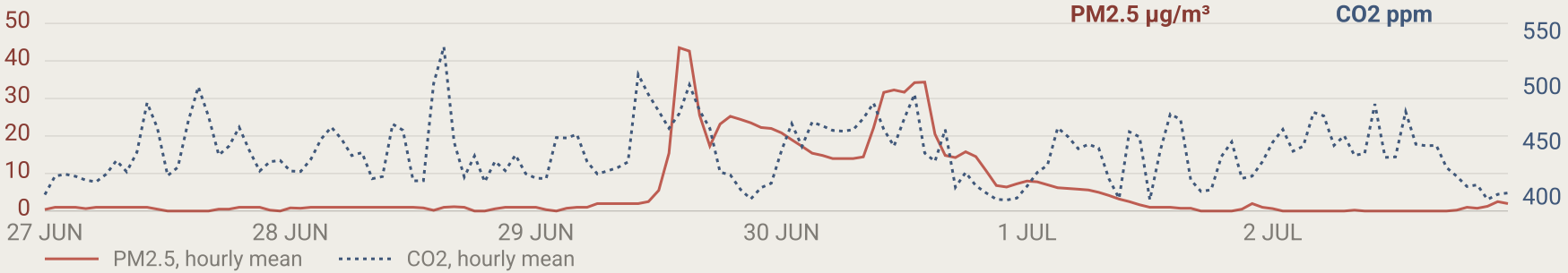
100.0% of hours met the limit

GO IAQS, an open voluntary benchmark, sets 25 µg/m³ PM2.5 (from WHO's interim target) and 1,000 ppm CO2. Every hour stayed under both.

GO AQS v1.0, goaqs.org

CO2 1h mean: Ventilation strategies did not raise levels

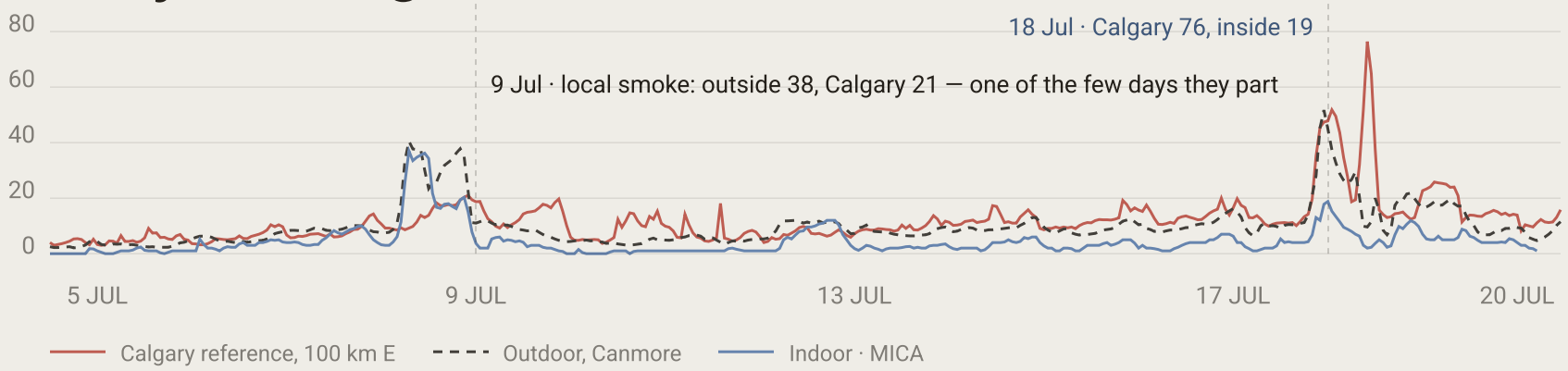
PM2.5 counts airborne particles, smoke and dust. CO2 reflects ventilation and occupancy.



PM2.5 RANGE	CO2 RANGE	CORRELATION
0.0-43.5 µg/m³	**400-539 ppm**	**0.17 · essentially none**

PM2.5 rose to **43.5 µg/m³** as the smoke moved through, then fell back once it cleared. CO2 held steady at **400-539 ppm** the entire six days, unrelated to the smoke and well within the 800 ppm limit. The correlation between the two is **0.17**, not meaningful: CO2 tracks ventilation and occupancy, PM2.5 tracks outdoor particulates, and ventilation strategies never pushed CO2 toward international thresholds.

After the event, outdoor readings in July were not yet enough to understand the evolution



Over these three weeks the two outdoor sources average 4.5 µg/m³ apart, while indoor tracks neither. *Hourly PM2.5, local time; figures are daily maxima.*

Solving Indoor Environmenta Quality

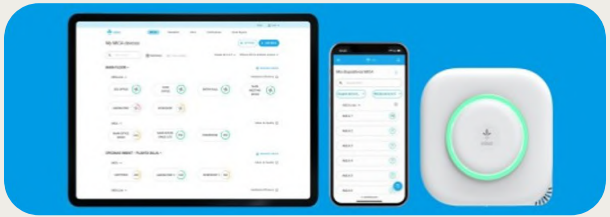
inBiot

Builds MICA, the sensor behind this report, and myInbiot, the platform that reads its measurements against health guidance such as WELL v2 and ASHRAE. **inbiot.es**

Cirkuit

A Calgary-based smart-building platform: wireless sensors for leaks, air quality and more, on one dashboard. **cirkuit.io**

The solution



Continuous monitoring of CO_2, VOCs, humidity and temperature gives a building the evidence LEED, WELL and BOMA BEST certification asks for.

Situational intelligence for the air indoors

Let's talk →

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"This report's data analysis was produced with the help of inBiot's agentic AI IAQ consultant, which applies WELL v2, EU EPBD, GO IAQS, ASHRAE and WHO guidance to real sensor data. The same intelligence can read your building's air, continuously."