

Mold Exposure: A Silent Crisis Costing Billions



MoldCo

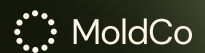
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About MoldCo

MoldCo is the first clinician-led digital health platform standardizing mold detox as routine preventative care with affordable on-demand expert care, advanced lab testing, evidence-based treatments, and concierge care support. The company is on a mission to make mold solutions a standard component of full-body health and tackle the widespread, overlooked health crisis of Mold Toxicity. Leading tech VCs, world-renowned physicians, and pioneering researchers support MoldCo's commitment to establishing mold detox as a crucial part of routine preventative care.

Learn more at www.moldco.com.



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Executive summary

Chronic exposure to water-damaged buildings and indoor microbial growth imposes an estimated \$165 billion – \$293 billion annual cost on the U.S. economy. This burden rivals national spending on diabetes, estimated at \$327 billion, and cardiovascular disease, at \$240 billion, according to recent reports from the CDC and the American Heart Association. The total cost captures both direct medical expenditures and wider productivity losses.

Direct healthcare costs include primary care visits, specialist referrals, diagnostic testing, pharmaceuticals, and treatment of respiratory illnesses, totaling \$86.5– \$133 billion annually. Indirect costs, such as workforce absenteeism, and property losses from moisture-related damage, account for \$74 billion to \$160 billion, depending on scenario assumptions. Estimates exclude remediation expenses, as reliable data remain limited; however, rough calculations suggest this omission understates the true burden by several billion dollars per year.

At least 7.6% of U.S. adults — roughly 20.6 million people — experience symptoms consistent with Mold-Related Illness or Chronic Inflammatory Response Syndrome, based on extrapolated estimates from available studies and findings reported by Dooley et al. (2024) and McMahon (2017). These conditions contribute to chronic fatigue, cognitive impairment, respiratory dysfunction, and systemic inflammation, all drivers of long-term multi-specialty utilization. Because diagnosis is delayed by 2–20 years, patients often cycle through repeated consultations, redundant testing, and avoidable pharmaceutical spending, producing an estimated \$6.9 – 49.2 billion annually in unnecessary specialist evaluations (Mira Health, 2024; Turquoise Health, 2024)

Unaddressed, the ten-year cumulative economic losses could reach up to \$2.93 trillion, excluding pediatric and disability- related costs. Conversely, early detection, provider education, and prevention strategies offer substantial potential returns: reducing healthcare inefficiencies, improving workforce productivity, and mitigating chronic disease progression

50%

of U.S. homes show signs of dampness and mold in a study across 12,842 homes for Spengler.

\$165 – \$293 billion

estimated annual cost of chronic exposure to water-damaged buildings to the U.S. economy.

Background: The evolving understanding of Mold-Related Illness

Definition of Mold-Related Illness (MRI): A multi-system inflammatory condition triggered by toxins and inflammagens found in water-damaged buildings. As Dr. Ritchie Shoemaker explains, diagnosis requires a clear exposure history, symptoms across multiple organ systems, and specific lab abnormalities.

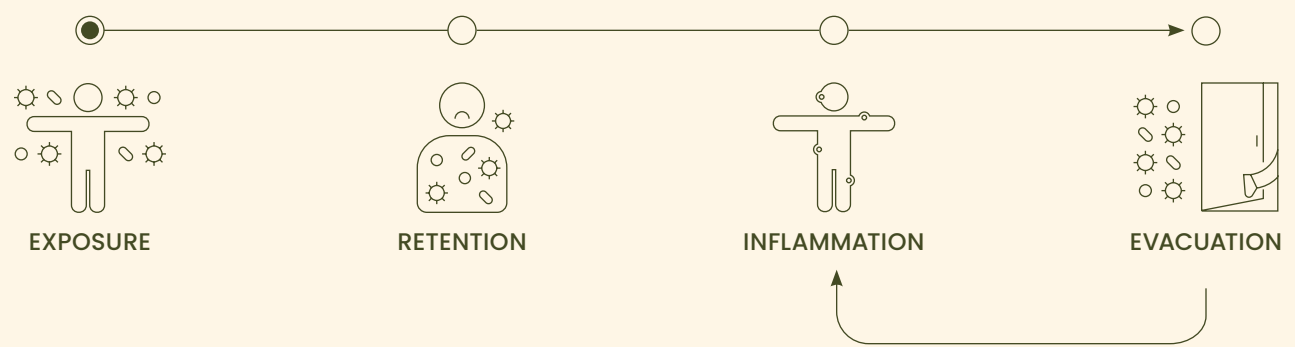
Mold-Related Illness was once thought to cause only mild respiratory or allergic reactions. Over the past three decades, research has shown that chronic exposure to damp indoor environments can produce wide-ranging systemic effects, including neurocognitive changes, endocrine disruption, immune dysregulation, and profound fatigue (McMahon et al., 2017; Dooley et al., 2024).

MRI more broadly encompasses adverse health effects from molds and their byproducts, including mycotoxins. When these biotoxins enter the body, most people clear

them through normal immune and liver pathways. However, about 24% of the population carries HLA-DR genotypes that impair this process, allowing inflammation to persist and evolve into chronic illness.

These mechanisms translate into meaningful societal impact: recurrent medical visits, misdiagnoses, polypharmacy, reduced productivity, and housing instability when the environmental source goes unrecognized. The scale of exposure is larger than previously understood. Recent research from the National Institute of Environmental Health Sciences (2024) found that 43% of buildings have current water damage and 85% show evidence of past damage—an exposure landscape far broader than earlier estimates. As the housing stock ages and flooding events rise, MRI prevalence is expected to continue increasing (Change the Air Foundation, 2024; U.S. Census Bureau, 2024).

FIGURE 1 – TIMELINE OUTLINING THE MECHANISM OF CHRONIC MRI.



For 24% of the population, inflammation continues even after leaving exposure.

Economic cost

The total annual economic burden of Mold-Related Illness on the U.S. economy is estimated between \$165.4 billion and \$293.2 billion, with a conservative midpoint of \$229.3 billion. These calculations include only adults and exclude children, emergency-room visits, disability outlays, and remediation expenses. Each estimate below is derived from published data, adjusted to 2024 US dollars, and grounded in conservative assumptions.

Table 1 – Breakdown of Low and High Cost Estimates
Attributable to Mold-Related Illness

Category	Low End (in billions)	High End (in billions)
Annual Healthcare Provider Visits	1.6	4.1
Respiratory Illnesses	26.6	28.3
Pharmaceuticals	51.4	51.4
Unneeded Referrals/Testing	6.9	49.2
Productivity Losses	72.8	99.2
Property Losses	6.1	61.0
TOTAL	165.4	293.2



Annual Healthcare
Provider Visits:
\$1.6 – \$4.1 billion

Based on an average cost of \$137.5 per visit (Mira Health, 2024; MDsave, 2024) and one annual visit for 20.6 million adults affected by MRI. This assumes that each individual seeks at least one routine or symptom-related consultation annually, capturing only baseline primary-care utilization rather than the multiple visits typical for chronic inflammatory conditions. Factoring in inflation-adjusted physician service fees and regional cost variability, the true cost may be closer to \$150–\$175 per encounter in metropolitan areas, indicating potential underestimation. The figure also omits indirect administrative and follow-up costs that accompany chronic disease management—such as lab work or patient education—which, if included, could elevate the total primary-care segment of the economic burden by roughly 20–25%. These refinements underscore that \$1.6 – \$4.1 billion range is a conservative baseline within the broader national healthcare cost model. This number represents the midpoint between the low- and high-end PCP visit estimates.



Respiratory Illnesses:
\$26.6 – \$28.3 billion

In 2015, Dr. D.H. Mudarri published cost estimates for mold exposure in correlation to common respiratory illnesses. Allergic rhinitis as a result of mold exposure contributed \$3.7 billion to the healthcare burden, while bronchitis was responsible for \$3.7 billion. Asthma expenses topped \$15.1 billion each year, with another \$1.7 billion in asthma deaths secondary to mold. Adjusting for overall and healthcare annual inflation rates, we estimate \$30.2 billion and \$28.3 billion, respectively, in annual costs. In 2024, the Change the Air Foundation published that the costs of respiratory illnesses were \$22 billion.



Pharmaceuticals:
\$51.4 – \$51.4 billion

Total U.S. prescription drug expenditure is \$406 billion (CDC, 2024; HHS, 2024). Assuming 60% of Americans have a chronic illness, MRI patients (7.6% of adults) represent 12.67% of this cohort. $12.67\% \times \$406 \text{ billion} = \51.4 billion . This proportional allocation assumes MRI prevalence within the chronically ill population mirrors adult prevalence.



Unneeded Referrals/ Testing: \$6.9 – \$49.2 billion

Based on our calculation of a single unnecessary specialist referral per year—and assuming minimal testing by that specialist—the average cost of that referral and evaluation across 22 common MRI-related symptoms is \$1,178.29, with a median cost of \$897.50 per patient. We model only one referral for simplicity, though many MRI patients see multiple specialists; including all referrals would increase the total substantially. To estimate the average cost of unnecessary specialist referrals and associated diagnostic testing for symptoms linked to mold exposure, we first mapped each of the 22 common symptoms to the type of specialist a typical patient would be referred to, along with the standard set of diagnostic evaluations ordered in such cases. National cost data were then used to determine representative consultation fees for each specialty and the corresponding range of test prices, including low, high, and mean estimates. These data were integrated to model the total cost incurred per patient encounter, combining the initial specialist visit with the average diagnostic workup. The resulting figure represents the expected average cost of an unnecessary specialist referral and evaluation related to mold-associated symptoms under current healthcare cost conditions.

The least expensive referral and testing was \$335 netting a low end projection of \$6.9 billion. The highest cost referral and testing was \$2382 leading to a high end projection of \$49.2 billion. Many MRI patients see 5–6 specialists for their symptoms directly related to and explained by MRI pathophysiology. In practice, many MRI patients see five to six specialists, which aligns with the multi-system nature of the illness. Delays in accurate diagnosis further amplify resource waste. It often takes 2–20 years for a patient to receive the correct diagnosis. When Dr. McMahon began treating MRI in 2009, it was common for patients to have suffered for two decades and to have seen 30 or more physicians without answers. Many ultimately identify the pattern of their symptoms through self-directed research before receiving a formal evaluation. These prolonged diagnostic timelines result in substantial, ongoing misallocation of medical resources due to missed and incorrect diagnoses.



Productivity Losses: \$72.8 – \$99.2 billion

Loss of productivity is an indirect result of illness. The CDC states 60% of persons in the U.S. have at least one chronic illness, and 40% have 2 or more. However, amongst employees, 78.4% have at least one chronic illness. The average annual productivity loss per employee with chronic conditions is estimated at \$4,798. The same report estimated \$575 billion in lost productivity (and 1.5 billion days) per year for employees with chronic illness. Using the same logic as above (pharmaceuticals), adults with MRI would account for 12.67% of the 60% of Americans with chronic illness. Based on the total productivity loss of \$575 billion for chronically ill workers, this would account for a low-end calculation of \$72.8 billion in lost productivity each year.

Another way to calculate productivity loss is to look at the average annual productivity loss for chronically ill employees, described as \$4798 per year. With over 20 million adult MRI sufferers, this gives a high-end calculation of productivity loss of \$99.2 billion per year. The two productivity approaches yield different totals because one uses national chronic-illness productivity baselines, while the other applies per-employee loss directly to MRI prevalence.



Property Losses: \$6.1 – \$61.0 billion

An estimated 14,000 Americans experience water damage daily (iPropertyManagement, 2024), equal to 2.04M homes per year. With average loss between \$3,000 and \$30,000 per incident, annual property loss due to water-related damage ranges from \$6.1 billion to \$61 billion. These incidence figures reflect households rather than individual Americans, which explains the lower annualized count compared to the raw 14,000-per-day estimate.

These estimates intentionally exclude remediation expenses due to data variability. Rough calculations suggest remediation costs could range from \$4 billion to \$36 billion annually, but these are not included in the core model.

Approximately 50% of U.S. buildings show signs of dampness or past water intrusion (Spengler, J.D., et al, 1994). Flood frequency and intensity exacerbate this issue, increasing insurance claims, property loss, and displacement costs.

Investment in proactive infrastructure maintenance and air-quality standards could produce long-term savings. Even a 10% reduction in national MRI prevalence would generate \$18 billion to \$29 billion in annual economic benefit.

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Data & sources

From the outset, this analysis excludes at least 5.32 million affected children. When multiple estimates existed, the most conservative values were used. There is no standardized definition for Mold-Related Illness (MRI): some studies frame it as symptom worsening within respiratory disease, while others describe it as a systemic, chronic inflammatory condition.

For productivity losses, we assumed 100% employment. This avoids distortion created by the unemployment calculation, which divides the number of unemployed individuals by the labor force—a denominator that excludes retirees and other non-participating groups.

Symptom selection was limited to those most consistently associated with MRI, meaning several conditions frequently reported by patients—such as fertility issues, miscarriage, and early menopause—were not included.

Because few studies rigorously quantify MRI-associated symptom prevalence, we used broad search criteria and incorporated all relevant peer-reviewed work. We applied a conservative prevalence estimate of 7.6%. Two studies report pediatric CIRS prevalence at 7.01% and 7.6%, but both draw from children already identified with CIRS, meaning true prevalence is almost certainly higher. Given CIRS is progressive, adult prevalence is expected to exceed pediatric rates. Finally, this analysis does not account for ER visits, disability costs, or the cost of testing water-damaged buildings, all of which would further increase the true economic burden.

Cost inputs were drawn from:

- **Healthcare costs:** MDsave (2024), Turquoise Health (2024), Mira Health (2024)
- **Pharmaceutical expenditures:** CDC (2024), HealthCentral (2023), Milken Institute (2018)
- **Workforce productivity:** Integrated Benefits Institute (2023)
- **Property loss estimates:** iPropertyManagement (2024), Legal Clarity (2024)

Each category was inflation-adjusted to 2024 dollars using the U.S. Inflation Calculator (2025) and Peterson-KFF Health System Tracker (2024).

Assumptions: one PCP visit and one referral per patient per year; adult population only; full employment assumption for productivity calculations; and conservative cost estimates across categories.

This analysis uses conservative assumptions and excludes children, disability payments, and remediation expenditures due to incomplete data. While the national burden is already comparable to other leading chronic diseases, inclusion of pediatric and housing-cost impacts would likely elevate total annual costs beyond \$300 billion. Future work should focus on refining cost attribution models, integrating disability-adjusted life-year (DALY) metrics, and quantifying benefits from specific intervention programs.

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