

PURE INSANITY

The Hot New Luxury Good for the Rich: Air

The wealthy have different houses, different cars, different lifestyles from the rest of us. These days, they also want to breathe different air.



When I stepped into John Roe's apartment early last December, slipping off my boots at the elevator that opens into the home, it wasn't immediately clear that people inhabited the space, let alone a child. The four-bedroom, four-and-a-half bath Manhattan residence looked like a showroom. In the living room, a white minimalist couch with no arms confronted two white bouclé chairs. White couch, white lamps, white walls. Even Roe's wife, Cherry, wore white. Charlotte of the Upper West Side has no dust, she told me—unlike the couple's previous home, on the sixty-second floor of the Four Seasons Private Residences. Above my head, gentle classical music issued from invisible speakers.

Roe, a ruddy Asian man who wore a pink polo shirt tucked into khaki pants, is the developer of this nine-story brick and terra-cotta building, named after his daughter. His goal, Roe said, was to create the most immaculate and sustainable indoor environment possible. He obtained a Passive House Institute certification, which recognizes when buildings minimize the energy used for heating and cooling with airtight seals and insulation. (Such measures can decrease energy consumption by up to 90 percent.) To reduce residents' inhalation of volatile organic compounds, Roe employed nontoxic building materials. Indeed, the star of Charlotte is its air. Each unit sports its own Swiss-engineered ventilation system, called Zehnder. On an iPad, Roe showed me the app that gives residents control over what they breathe.

The building's approach to filtration is undeniably sophisticated. The air in each unit isn't shared with any other. Outside air is brought in, filtered, treated with an ultraviolet-C light that kills 99.9 percent of pathogens, and completely changed out once per hour. Circulation can be boosted or slowed. Most apartments with similar systems recycle the air every four to five hours a day. "We were thinking, if we're already going to build a Ferrari, then why would we only give it a 200-horsepower engine?" Roe said. "Let's put a 1,000-horsepower engine into it." The quadruple-layer, triple-paned windows feature museum-quality glass and are generally opened only for cleaning. Otherwise, you'd let in air far dirtier than what's circulating inside.

At night, when Roe's family is sleeping, it "smells like you're camping, because the fresh air is getting pumped in at such a rapid rate," he said. You know the air is good, he told me, because the hydrangeas last. Typically, when cut at the stem and arranged in a vase, the delicate flowers wither and droop in a few days. In his apartment, the blooms will stay perky for nearly two weeks.

Walking down the long hallways, I took deep, greedy breaths. There was a complete absence of odor, yet somehow the air felt bright, abundant—the opposite of stuffy, the inverse of stale.



A view from a window inside
Charlotte of the Upper West Side,
Manhattan

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On June 7, 2023, New York City briefly had the worst air quality in the world. The sky turned auburn as smoke from wildfires in Canada spread throughout the boroughs. The horizon vanished into an orange haze. It was not hard to feel that we were living in an era Stephen Pyne, an emeritus professor at Arizona State University, has called the Pyrocene. Last year, at one point or another, New York, Chicago, Pittsburgh, Columbus, Detroit, and Portland, Oregon, all had air in the “hazardous” or “unhealthy” range, according to the Environmental Protection Agency. A September 2023 study found that wildfires have erased 25 percent of air-quality improvements made since 2000. By mid-2023, the average American’s smoke exposure was worse than their total cumulative exposure every year since 2006.

Unlike other effects of climate change, the environmental reporter Oliver Milman has argued, smoke will be more egalitarian, affecting “the wealthy and white as well as poor people of color.” After all, smoke doesn’t care about neighborhoods or country borders. Primarily made up of fine particulate matter less than 2.5 microns long, it is mobile, and small enough to intrude nearly anywhere.

In New York over the summer, outdoor after-school activities were canceled. New Yorkers were told to stay inside and shut the windows. Experts advised using air conditioners to recirculate indoor air, and supplement with additional purifiers, if available. (These sold out quickly at local stores.) At Charlotte and a growing number of high-end apartments and condos, advanced filtration systems kicked into gear. Elsewhere, people were not so lucky. Around three-quarters of the buildings in New York were constructed before 1960, and thus before central air conditioning was commonly installed. In my apartment in Greenpoint, Brooklyn, it smelled like a group of smokers had lit up and had a party. The hydrangeas I buy at the farmer’s market die tragically quickly on my kitchen table.

Once enclosed inside, the air we breathe is not the same. The notion that smoke could be a democratizing force, afflicting everyone equally and perhaps motivating them to take action to mitigate worsening climate conditions, is already colliding with the reality of an emerging luxury air market, yet another example of how, as the environment becomes less habitable, the wealthy will continue to insulate themselves from its worst aspects—even as their lifestyles disproportionately fuel emissions. As the fervor for ventilation that began during the pandemic meets the need to blockade against smoke, some wealthy people will do anything, and pay any amount, to guarantee they will always have a breath of fresh air.

Take a casual scroll through luxury real estate listings today, and you'll find that Charlotte of the Upper West Side is not alone: Many buildings are enticing buyers with the promise of an exceptional breathing experience. A \$1.5 million apartment in Battery Park City boasts "twice-filtered outdoor air," while a Gramercy condo for \$3.1 million notes that it has "filters in the common and amenity areas for premium and fresh air ventilation." At Rose Hill in NoMad, where apartments range from \$2 million to \$6 million, air filters occupy every corner of the building, including common areas, and there are additional "perimeter walls and floor slabs to thwart transmission of air, odors and contaminants." A 2023 roundup from City Realty listed more than a dozen current properties in New York City that brag about just how clean their air is. "Air is being marketed as a luxury product feature," said Richard Peltier, a professor of environmental health sciences at University of Massachusetts Amherst, who began studying air quality in graduate school, when he collected and examined air filters from buildings in the Bronx. "You know, it comes with a gym, and a concierge, and a HEPA filter."

In California, which has a longer history of smoke events, the high-end air market has already taken off. In 2020, the *Los Angeles Times* covered how Gregory Malin, a developer based in San Francisco, began marketing the air inside a property as an amenity just like a gym or a three-car garage. Carl Gambino, a real estate agent with Compass in Los Angeles, told the newspaper that his most recent multimillion-dollar sales could be directly linked to their state-of-the-art filtration technology. And the trend is spreading: In Chicago, the building Elevate claims to be the first in the city to install hospital-grade UV-C/HEPA air filters in the lobby, elevators, and amenity floor. Mobile UV-C sanitizing equipment sterilizes the air in each apartment before a resident moves in.

Luxury markets have developed in other parts of the world with poor air quality, too. For *Wired*, Akanksha Singh described the "pay-to-breathe" economy in India, where air-filtered spaces are accessible only to affluent people. In China, the sociocultural anthropologist Victoria Nguyen reported, underground bomb shelters have been converted into communal breathing areas, while wealthier Chinese can afford to go on "lung wash" vacations. For many others, on bad-air days, activities that used to take place in parks—playing cards, exercising, reading the paper—now take place below ground.

In New York, the fixation on air began during the pandemic. During Covid, ventilation was king. Outside air, and lots of it, could prevent the spread of airborne viruses. During a wildfire, the opposite is true: Outside air is noxious, and ventilation is less important than maintaining a seal and cleaning the air you've got inside.

This is what makes the technology in these high-end buildings, objectively speaking, so impressive: the ability to bring in, filter, and clean outside air, while also sealing off the outside world when needed. The seal is tough for leaky, drafty older buildings, especially those that date from the turn of the century: better for pandemics, but bad for smoke and pollution. During the 1970s, a global energy crisis prompted architects and engineers to create more airtight construction out of plastic, pressed wood, and vinyl rather than wood or stone. The new designs decreased ventilation, so unless such buildings can filter the air that's brought in, the air quality suffers. This makes truly clean indoor air a complicated, and expensive, dance: You need the ability to toggle between outside and inside air, seal off individual apartments, and still provide high levels of filtration and—if desired—disinfectant technologies, such as UV light. Usually, building a 50-story condo would cost \$800 to \$900 a square foot, Roe said. The Charlotte cost around \$1,200 a square foot.

The costs have not dissuaded the wealthy, who appear to be more concerned about smoke, according to a 2022 study in *Nature Human Behaviour*; those who live in affluent locations perform more online searches for information about air quality and health protection during smoke events. They are also more likely to stay at home and report negative moods about what they see outside their windows. In her book *The Shock Doctrine*, Naomi Klein argued that corporations would respond to crises by taking advantage of the distress they cause to sell new products. "This is another example of it," said Christine Eriksen, who leads a research group called Geographies of Disasters at the University of Bern. "Real estate agents or developers are seeing a business opportunity in other people's misfortune."

Fear about smoke is well-founded. For the past two decades, ever since collecting filters in the Bronx, Richard Peltier has been studying human exposure to air pollution. He's been asking what people breathe as they work, as they go about their day, and as they sleep at night in their homes—and how it affects their bodies.

According to Peltier, eight million people around the world die early per year from air pollution exposure. Air pollution is associated with cancer, heart disease, and reproductive, neurological, and immune system disorders. Even in the short term, exposure to wildfire smoke specifically can damage the lungs and heart, cause strokes, and exacerbate asthma and other respiratory issues. Smoke harms many bodily systems, not just the respiratory or cardiovascular, agreed Colleen Reid, an associate professor of geography at the University of Colorado Boulder. The particles of black carbon, the sooty chemical that wildfires make, are small enough to enter the bloodstream, which can bring them anywhere in the body. From 2010 to 2020, worsening air in the Western United States caused an increase of 670 premature deaths per year in those areas. “Particulate matter is associated with virtually every adverse health outcome that we know about,” said Joan Casey, an environmental epidemiologist at the University of Washington.

As Casey pointed out, smoke will act as a “multiplier” of existing disparities. Dozens of studies have found that lower-income people are exposed to more smoke and experience more negative health effects from it. According to the EPA, people of color and impoverished children and adults are more likely to have asthma and other respiratory diseases.

This is in part because people with lower socioeconomic status have less access to tools to improve the air they breathe at home; even those low-income households that have air conditioning in their homes may not run it because of electricity costs, and air conditioners are more effective when they have high-quality filters that are changed frequently. We learned during Covid that the indoor environment is more important than scientists had previously assumed. Based on data from the American Time Use Survey, the average American spends more than 70 percent of their total time indoors at home. Before, scientists often tried to estimate exposure based on outside air pollution. But because people experience wildly different indoor environments, and spend so much time there, their health heavily depends on the quality of the air they breathe inside.

Real estate statistics bear out the inequities: A 2021 study that collected data from 1,400 indoor air sensors installed by users of the crowdsourced PurpleAir network in San Francisco and Los Angeles showed large differences in indoor air according to house value. Using Zillow data, the researchers found that, during smoke events, newer homes and those with central air conditioning had better air quality. The average price of the homes that have these filters is 20 percent higher than the median property values.

A home acts, at the most basic level, as a form of shelter. As the outdoor climate becomes more erratic, everyone will need, even more than we already do, places to cool down, warm up, stay dry, and breathe freely. But how far should architecture or technology go to protect from all the dangers of the outside world?

In 1969, the architectural critic Reyner Banham argued that the way modern buildings look should be guided more by the development of technology that controls our environments, like air conditioning, than by aesthetic concerns. Banham believed these advancements in our ability to create man-made climates should compete with other architectural desires.

He even suggested that, given all of the gadgets that modern residences have now, we might as well remove the house part. In his essay “A Home Is Not a House,” he speculated about the end result of this shift in priorities, presenting a structure he called the Environment-Bubble, a “transparent plastic bubble dome inflated by air-conditioning output.”

Push the idea of the hypercontrolled environment to the extreme, and it quickly enters the dystopian, as a host of artists and cultural critics have observed. In 1970, the underground architecture collective Antfarm staged “Breathing—That’s Your Bag,” a performance that brought people into a sealed pneumatic bubble called the “Clean Air Pod” so that they could breathe pure air, free of pollution. If people chose not to enter the pod, they were asked to sign a death consent form. During the 1970s, a British anarchist architectural group called Street Farm published an underground paper where they predicted that fresh air would be valuable real estate for purchase in the future. In 2006, the activist group the Yes Men made the Survivaball, a large inflatable suit that they called “a gated community for one,” to protect corporate managers from the effects of climate change. “We have a plan to save you from the wide range of catastrophes that are likely to come from our increasingly unstable climate,” their spoof product’s website claimed. “While others look to Senate bills or UN accords for a climate solution, we look to our best engineers.”



An activist wearing a “Survivaball” is flanked by “The Yes Men” founders Andy Bichbaum (left) and Mike Bonanno (right) at the World Economic Forum, Davos, 2014.

COURTESY OF KEIL TROISI/THE YES MEN

Such visions don’t seem too far off the mark at Sven, a luxury high-rise with a curved facade in Long Island City, where a team of engineers, whose duties include supervising air-quality monitors, can tweak the building’s system at any time. Sven is the second-tallest building in Queens and holds more than 950 apartments; at the street level, if you crane your neck, you can barely see the top of it.

On an unseasonably warm day in early December, I stood in a two-bedroom corner unit that boasts floor-to-ceiling windows with a sweeping view of Manhattan’s skyline. What was more impressive, though, was what I saw elsewhere, in the guts of the building: a multistep filtration system that is constantly bringing in about 60 cubic feet per minute, or CFM, of air. (One CFM is around a basketball of air; the recommended amount for an adult to breathe at any given time is around 15 CFM.)

At Sven, all of the outside air is filtered twice: once through a MERV-8 and once through a MERV-15 filter, said Philip Skalaski, the senior vice president of engineering and energy services at Durst, the building’s developer. (MERV stands for minimum efficiency reporting value and describes how capably a filter can capture particles. The higher the number, the better the filter; the highest is MERV-16.)

The fan coil units in each apartment have additional MERV-13 filters, which take care of any contaminants generated by the residents themselves. “We have a full operating engineering staff here that is constantly watching,” Skalaski said. “If something were to happen ... they could shut things down.”

During the summer’s smoke event, the engineers immediately responded, lowering the amount of outside air coming in. “We did direct comparisons of particulate matter,” Skalaski said, “and it was extremely low on the inside.” A resident of the building told me that, when she stepped outside, the smoke was so bad she could taste it on her lips. Once indoors, the smell and taste vanished.

For our last stop, Skalaski walked me down to Sven's amenities levels, where there is a "library"—a large, cavernous room that looked like a study hall on a university campus. Even more fresh air gets pumped into the library, since the space is bigger, though not many people were there to breathe it. One resident sat at the end of a long, otherwise empty table. At Charlotte, Roe had shown me how even the residents' storage units and pet-washing room have filtered and cleaned air. "It does cost more in energy, but it's better for the health and wellness of the building," Skalaski said. "We felt like this was a valuable trade-off."

Not everyone's home can take on all of these protective qualities; it's practically impossible to engineer a design like Sven's into most of the housing stock. "Speaking totally unemotionally, that approach is as good as it gets," Peltier said. "But ... very few people get that." In poorer countries, HEPA filters are even more of a rarity.

I asked Skalaski whether people have come to demand this standard of air, alongside other amenities. He said he thinks that they have, that air quality of this level will be expected in a building of this stature. "You go to the places with cheaper rents, you know, you might not get this level of quality."

The apartments in these buildings are typically millions of dollars to purchase, thousands to rent, but as more people see the perks of what they offer, Roe thinks they will want the same amenities. Eventually, he imagines, these technologies will "trickle down" to the \$1 million buyer.

"After that, it basically becomes like a seat belt," he said. "How long will that trickle take to get to the bottom? I don't know. It depends on other people."

Outdoor air is regulated through the Clean Air Act of 1970, a federal law that gave the EPA the power to monitor and set limits on hazardous pollutants in outdoor air; the named pollutants now number 187. In response, factories installed scrubbers onto smokestacks, and car manufacturers introduced catalytic converters to cars. But because wildfire smoke isn't the result of the behavior of particular factories or even particular industries, it simply can't be regulated the way that air has been in the past. And the Clean Air Act made no provisions for the atmosphere indoors. "We do nothing to regulate indoor air quality," said Marshall Burke, an associate professor at the Stanford Doerr School of Sustainability. "It's just treated totally differently, and we don't measure it comprehensively. It's sort of an unknown." The American Society of Heating, Refrigerating and Air-Conditioning Engineers has standards that outline minimum ventilation rates, but there's no mention of who ought to be checking, how often, or when.

Consuming 40 percent of energy in the United States, and around 70 percent in New York City and other high-density cities, buildings at once protect us from and perpetuate climate-driven problems. When buildings bring outdoor air inside, the exchange increases energy expenditure. That said, most buildings with high-end filtration systems adopt sustainability measures, and the extra energy expenditure can be ameliorated through heat and energy recovery ventilation, which takes energy from hot air before it's exhausted from a building. Nevertheless, Peltier thinks that it is a stretch to call the air-quality improvements in these buildings "sustainable." Bringing in outside air, cleaning air, heating up or cooling down air—all these activities require energy. "You're not reducing your consumption of a limited product, like water, for example," Peltier said. "You're taking a product ... that's polluted and making it better for the people who live there. That's about it." For contrast, when people put solar panels on their apartments or homes, they make more energy accessible to others—the benefit to the broader public is clear.

Rather than leaving the problem to individual developers to devise solutions for particular buildings, Stanford's Burke argued, governments should consider air quality a novel infrastructure issue. Encouragingly, New York City lawmakers introduced two bills in 2023 regarding air quality, proposing ways that indoor air in schools and municipal buildings might be measured and standards enforced in the future, and giving officials 18 months to determine the benchmarks. Two additional bills proposed five-year pilot programs to analyze air quality in residential and commercial buildings, programs that would be voluntary unless a building receives financial assistance from the city.

Meanwhile, there are public health solutions that can be pursued right away, like creating clean air centers, retrofitting buildings, and distributing mobile, more affordable filtration devices. Portable filtration is relatively cheap, Burke said. “That is going to be accessible to a lot more people than who can afford to buy your fancy New York penthouse suite.”

Without any substantive attempt to address the needs of the broader public, however, smoke and indoor air stand to become another driver of “climate gentrification,” when some property becomes more valuable because of its ability to withstand the effects of climate change. In 2018, Harvard University researchers published a paper on one such instance after noticing that elevation was affecting property values in Miami-Dade County. If a house was at a higher elevation, its value was more likely to increase between 1971 and 2017, whereas the value of homes at lower elevations was more likely to decrease.

Follow-up work on climate gentrification has found that when “green” or resiliency improvements are made to a neighborhood—installing rain gardens or green roofs, for instance, or building LEED-certified high schools—the changes do little for those most exposed to environmental risks. A 2020 study in Philadelphia found that green resilience infrastructure didn’t end up helping socioecologically vulnerable people. Instead, the improvements simply attracted the higher-income people who could better afford them.

In other words, unless there’s some effort to bring these technologies to the wider public, all they do is enable a few to live with pristine air. We certainly shouldn’t assume that the innovations will automatically trickle down to everyone, Eriksen said. There needs to be some investment, she argued, in “social betterment.”

During New York City’s smoky summer, the writer Adam Gopnik described how people were turning to the novel *Bleak House*, in which Charles Dickens evokes the suffocating, engulfing quality of London’s air pollution in the mid-1800s: “Smoke lowering down from chimney-pots, making a soft black drizzle, with flakes of soot in it as big as full-grown snowflakes—gone into mourning, one might imagine, for the death of the sun.” The novel aptly characterized the environmental crisis of the period, Gopnik wrote. In Dickens’s time, too, the hardship did not befall everyone equally; smog, fog, and smoke were characteristic of low-income neighborhoods. The poor were the ones with dirty faces and clothes covered in soot.

For Peter Adey, a professor of human geography and the author of *Air: Nature and Culture*, the air in cities “reveals who belongs and who does not, who is deserving and who is not.” Adey describes construction projects as seeking to “secure the air from everyone else.” He called these “secessionary atmospheres”: every man’s air for himself. Your air is only as clean as the air you personally can buy. But individual interventions of the kind that the “wellness” sphere usually dictates are among the worst responses we can have to the climate crisis, Eleanor Cummins wrote in this magazine in 2020. “Personal solutions for public crises,” as Cummins put it, are predicated on “magical thinking at best, and myopic selfishness at worst.”

At the Solaire, a high-rise with 279 residences that overlooks the Hudson River, Miroslav Salon brought me up to the roof to see where the air pulled out from the bathrooms and kitchens was being exhausted. As with the other buildings I toured, fresh air is pumped into the apartments 24 hours a day. The outside air is cooled or heated, and moisture added or removed depending on the season. Here, too, the air inside is much better than out. “There’s no need for the windows,” said Salon, the resident manager. “But I found from experience that it’s more psychological.”

Laurence, a woman who owns an apartment at the Solaire and works in interior design, said that her profession makes her very aware of the health implications of indoor air quality. During the wildfires, Laurence said, she was grateful to be unaffected. All of her homes have had high-quality filtration systems. “I can tell the difference when visiting homes with lower levels of air filtration,” she said. “There is often a smell or an unpleasant odor in the space. It doesn’t feel comfortable or safe visiting or living in those types of interiors.”

As I left the Solaire, I looked out onto the Hudson River. There's been talk of building some form of seawall here to protect against flooding from the Hudson River during storm surges and rising water levels. Looking back up at the building, I imagined it surrounded by walls, windows sealed shut from the outside world. The life that these kinds of buildings offer is like one from a science-fiction novel, epidemiologist Casey said. "This is going to be the future: You're under a glass dome."

Many city planners, science-fiction writers, and engineers—even the creators of *The Simpsons Movie*—have considered the prospect of people living enclosed below glass domes. The best-known proposal is probably from the American architect Buckminster Fuller, who wanted to cover Midtown Manhattan with a mile-tall shield to reduce air pollution and defend against inclement weather. The "in-dome" apartments, Fuller acknowledged, would probably have higher rents.

The glass dome might be a trope of science fiction, but some version has already arrived. It's just more subtle than Fuller's giant contact lens, suspended over the city: The domes today are the buildings themselves. In a handful of decades, worsening air quality may divide everyone into those who can thrive "in-dome" anywhere, no matter how bad the air outside is, and those who can afford no such protections, and must endure the harrowing consequences: more frequent illness, earlier death.

During the smoke in New York, Roe said, his family couldn't tell at all from inside their apartment. In the kitchen when I visited, I stood underneath a vent as Roe turned on the hood over the gas stove. Charlotte's system detects how much air is being taken up through exhaust vents and immediately begins to replace it with clean outdoor air. Within 30 seconds, the vent over my head started releasing a breeze that blew my hair around pleasantly. "We can cook shrimp, lobster," Roe said, and if somebody visits 30 minutes later, there is no trace of a seafood smell.

Last Thanksgiving, Roe had friends and family over to Charlotte for all the usual fixings—turkey, stuffing, potatoes, cranberry sauce. The people sitting at the table were perhaps a dozen or so feet from the stove and oven. "They could barely smell the food," Roe said. "It's very, very effective."