

Something in the air

Ahead of Environment Day tomorrow, we look at imaginative ideas that can help us survive the pollution caused by construction dust

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FINDING it hard to breathe? Construction, with its constant generation of dust, is one of the biggest pollutants in the city currently. A 2020 study by National Environmental Engineering Research Institute (NEERI) and IIT-Bombay clearly pointed out that dust generated by construction work comprised 70 per cent of the particulate matter (PM) load in Mumbai's air. In February, Mumbai's air-quality was worse than Delhi's, spurring activists to demand a halt of construction activities in the city.

In April, Thane Municipal Corporation (TMC) declared it would fine developers to the tune of ₹5,000 to 25,000 if they did not do anything to control the dust from construction sites. But how does one do that?

Architect Keith Menon, co-founder of Spiro Spero and Circle in Goa, has a way out. The firm has built a 2.5 acre-resort in Goa, using chira stone mined from the property itself. "We dug the ground using techniques that would not crack the stone, so that we were able to get large slabs that could be assembled by binding," he says. "As a result, air pollution was reduced by 30 per cent [as this reduced use of cement and concrete as well as cutting out of marble from mountains and transporting it to site]."

Chira is red mud compressed and compounded over 100 years, and is unique to the Konkan belt. It's a worthy replacement for marble, as almost 20 to 30 per cent of the latter is wasted in the form of powder when it is cut into desired shapes. And this powder contains calcium carbonate and silica that lines lungs and decreases their capacity to filter air, causing pulmonary diseases.

"We often take chira or any organic material found naturally on the project site and reuse it for the next project," says Menon. "We hope this creates a chain reaction that quells the effects of construction."

Like Menon, Lavina Rodrigues too is trying to make a change in the way things are traditionally done. While working with the Navy, she invented Olle Pods that can replace concrete. "The pod has a pre-fabricated metal frame with walls made of calcium silicate panels," says the Kharghar-based architect. "The 35 cm of wall and 30 cm of roof/floor is filled with mineral wool for highest



↑ Chira slabs (right) are made of compacted red mud found in the Konkan belt and are a substitute for marble → An Olle Pod being anchored to the Earth with cranes. It is 480 sq ft in total and can be transported anywhere



The outdoor sensor that can check the Air Quality index and around your home; (left) Abhinav Gupta



The inside of the Olle Pod is swanky and is even equipped with designer toilet fittings

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Keith Menon, architect

What exactly are we breathing though? Abhinav Gupta's company, Active Buildings, manufactures sensors that tell you about the air-quality within your home as well as the area around it. "Most of our customers are concerned parents or social activists," says the Chandivli based engineer. "One parent placed a sensor in her child's school at BKC, another in her Vile Parle neighbourhood and a social activist used it to assess the air around the Deonar dumpyard." According to the report, the dumpyard predictably, had the worse readings, with the Ozone (O3) and Nitrous Oxide parameters in the 'Bad' category and are known to cause pulmonary ailments as well as decrease long term immunity.

Homegrown innovators are on it, though. Such as Tejas Sinal, founder of CarbonCraft, who reuses Recovered Carbon Black (RCB) (the powdered form of carbon) as tiles. "At first, we made bricks [out of RCB], but no one wanted to pay an extra four rupees for them," he says. "So we moved on to tiles because people like beautiful tiles. We place our equipment on the chimney in say, a tyre company. The powdered carbon that is collected, which would line our lungs otherwise, is moulded into tiles. These have lined the floors and ceilings of offices of international brands such as Adidas, who want to reduce their carbon footprint."

Internationally, checks and balances keep an eye on pollution generated by construction activity, and countries such as the United States incentivise use of less toxic raw materials or fuels and use of a less-polluting industrial pro-

cess. Use of mechanical collectors, wet scrubbers, fabric filters (baghouses), and absorbers—all of which reduce emission of construction particles in the air—are encouraged.

Countries such as the Netherlands have been trying to control construction as well. An Indian real estate developer based there gave us a glimpse into how the country deals with carbon emissions right from the get go. "There are very strict guidelines on how much a neighbourhood can be developed and how many projects can go on simultaneously," he says. "For example, in Mumbai, 20 to 30 projects can be underway within an area of 2 sq km. In the Netherlands, this would never be sanctioned. One of the procedures to procure a construction permit is called the Nitrogen/Carbon Dioxide Calculation. This is done by independent parties which are strictly reviewed by the government. These independent parties check the development of the project, right from the demolition phase [of an existing structure] to the new structure standing up, right up to when people move in—carbon emission at each stage is added up. If the parameters to control carbon emissions do not fit the set guidelines, they will not be allowed to build on the site in the first place. Also, you cannot use machines that are over five years old (counting the manufacturing date) which in itself cuts down the emissions by a large scale." Admittedly, the meagre population makes this kind of control possible. "Netherlands has 17 million people, which is the population of Mumbai alone," says the expert.

India, too, has norms for those seeking a green certification. The Indian Green Building Council (IGBC), the largest green certification organisation in the country, is the gatekeeper. Sundeep Vullikanti, an IGBC counsellor, shares some of the checks: "The first step is wrapping the green cloth around the site and keeping it constantly wet. Then comes building boundaries around the site to contain the dust, and keeping the trees as natural barriers. We ask developers to wet the path on which trucks come to the site so that the tyres do not carry the dust and dispel it on the road after leaving the site. We also tell developers to flush out air ducts before the building is occupied; otherwise all the dust and particles settled in there are pumped into the rooms by the air-conditioning."

In our climate, water is the most potent dust dispeller. It should be applied a couple of times a day on the green cloth. Another way to control dust is to clean the site at the end of every day with an industrial vacuum cleaner wherever possible, because sweeping can blow the dust particles into the air.

Tillage or roughening soft land is recommended to reduce wind erosion. It involves making a minimum of 15 cm furrows perpendicular to the wind direction. Mulching which covers a site construction with mulch made out of organic mulch materials including grain

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Brothers in arms

Star kids Aditya Rawal and Zahan Kapoor team up to tell a tale of army soldiers stuck in Siachin. And all they ask of you is to stop scrolling and marvel at the art form that is theatre



AASTHA ATRAY BANAN

SO are 'nepo kids' really all that different from us normies?" we ask Zahan Kapoor and Aditya Rawal. "What do you think?" they shoot back at us.

Kapoor, 23, who belongs to the first family of Indian cinema, is son to actor-director Kunal Kapoor and photographer Sheena Sippy. Rawal, 29, is son to actors Paresh Rawal and Swaroop Sampath. The normies, or normal people, are you, the reader, and this writer, who like many other Indians are undoubtedly curious about the inner workings of the cinematic industry and filmi families.

To answer their question—well, they seem quite normal to us, on the surface at least. We meet the two at Juhu's Mithibai College where they are rehearsing for 72° East Productions's Siachin, written by Rawal and directed by Makrand Deshpande. The survival drama about three Indian soldiers stranded following a blizzard on the highest, coldest battlefield on earth, stars Kapoor and begins its run at Prithvi Theatre on June 15.

Rawal arrive in an auto and guides us to the college auditori-

The play directed by Makrand Deshpande (left) is a survival drama about three Indian soldiers stranded in a blizzard on the highest, coldest battlefield on earth

um which has been their rehearsal space for a while. Both are dressed in basic tees and share a familiar vibe. They last shared screen space in last year's hostage drama Faraaz, inspired by a real-life terrorist attack that ravaged a Dhaka cafe. "The medium is different, the roles are different—I, as writer and him as actor—but in the sense of collaboration, it's pretty much the same in spirit," Rawal thinks. Ask Kapoor if being the playwright has made Rawal bossy, and he laughs, "Not at all. I tell him [without hesitation], 'Nahin, I don't want to do this.'" Rawal smiles, "I am a screenwriter also. When I do that, I have no power. As a playwright, I might have more power, but if someone is bringing to the table something that will enrich the play, you'd be a fool to turn it down. I see no value in being fastidious."

If Rawal studied dramatic writing at Tisch School of the Arts in New York and followed it up with a course in theatre at the London



The aim is not to go fast, big or strong. But to keep at it as long as possible. If you are getting gainful employment in the arts in the next 35 years, you have had a decent enough career

Aditya Rawal

Aditya Rawal and Zahan Kapoor rehearse at Juhu's Mithibai College auditorium. **PIC/AISHWARYA DEODHAR**

International School of Performing Arts, Kapoor has spent his childhood in the corridors of Prithvi, seeing plays take shape, and working as assistant director in the film industry. Both have been on the theatre circuit for a while, and are now dabbling in films. They hold each other in high regard, having watched and observed the other's work while shooting for Faraaz. "My opinion of him as actor has been bolstered by this play—he is fantastic! There is a reason why we are working together again," says Raw-

al. Kapoor returns the compliment when he speaks about Rawal, the writer. "He is intelligent, of course, and he brings well thought out ideas, understands broad strokes and the nuances, both. He also genuinely listens to other people's opinions, and creates a space where people are heard. He is passion-and output-centric."

For Siachin, Rawal says he made a trip to the glacier—"I went to all the museums there, read up books and accounts about it, and spoke to real people who have been there". It's a punishment posting, this writer tells him, the daughter of an ex-Army man. "Exactly! But some volunteer too. The point was to ask, when you are stranded in the middle of nowhere, what is most important?" Kapoor adds, "We wanted to know what it is that people hold on to?"

The reason theatre is important to both is because they want to recreate an organic feeling of what art and artists are, especially in a world dominated by AI and instant content. "I think there is no greater joy than being part of a collective human experience, and theatre is one of the ways in which we can engage in a story. It helps us get out of this scrolling frenzy. To enjoy a story is to make sense of life, and participate in another being's experience, sharing it with others in real time. As a young artist, I am putting more premium on what is considered old-fashioned," says Kapoor.

Rawal, the more pragmatic of the two doesn't believe in making art for charity. "Everything you do should be economically sustainable. For example, the right medium to present the story of Siachin was theatre, not a 100-crore movie. Also, with the advent of AI, video and sound manipulation, there is a growing desire to watch the pure human experience. That is where theatre comes in."

We circle back to them being privileged, and wonder if they truly always wanted to act and write. "It's more like constant poking for a consistent period of time," says Rawal, who playing football at the national level until he was in college. "Our childhoods were similar. I went to watch my father at rehearsal, my mother and I used to paint every Sunday." Kapoor says things got serious when turned 18. "We grew up in an environment that was passionate about the culture and arts. We talk about reading, new music, we go to museums—it's not a social, networking household; it's a passionate one. And so, when I got to the stage, I explored it organically. And realised, I am interested in it." Rawal sums it up with some plain speak, "It is beneficial [being a star kid], and you get to meet people you may not otherwise meet. You may even get your first break. But after that, your work speaks for itself. The aim is not to go fast, big or strong. But to keep at it as long as possible. If you are getting gainful employment in the arts in the next 35 years, you have had a decent enough career. Honestly, that's all I am hoping for."

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straw, fresh or old hay, fresh-cut forage or cover crops, chipped brush, wood shavings, tree leaves, is one of agriculture's most prominent methods and is 80 per cent effective in trapping dust at construction sites as well.

Aun Abdullah, the Environmental, Social, and Governance Leader at Lodha Group, claims that they have an advanced set of pollution control measures. "We closely monitor environmental parameters such as air sampling, noise emissions, and diesel generators. Maharashtra Pollution Control Board (MPCB) or Central Pollution Control Board (CPCB) stack emis-



KEITH MENON



LAVINA RODRIGUES



TEJAS SINAL



SUNDEEP VULLIKANTI



AUN ABDULLAH



SIRIRAM MAHADEVAN

sions to ensure compliance with limits. We have real-time air quality measurement stations installed at certain developments. We employ 120GSM monofilament vertical netting throughout our buildings which traps dust particles. To ensure dust suppression, we use treated water to control particle emissions (that traps dust) and

utilise water sprinklers on grind surfaces and during excavation activities and water suppression to mitigate dust emissions. We also deploy wheel washing facilities for construction vehicles to restrict pollutants from reaching public roads."

Sriram Mahadevan, Chief Operating Officer at Shapoorji Pallonji

Real Estate, says environmental impact assessment is conducted routinely to develop strategies to mitigate them. "We also prepare and implement site-specific environmental management plan. To control dust generation, various measures such as installation of dust collectors/scrubbers on batching plant silos, sprinkler systems

for real-time monitoring of temperature, humidity, PM2.5, PM10, and the Air Quality Index (AQI). These devices are GSM/Wi-Fi enabled, providing mobile access to data and ensuring the effectiveness of dust suppression measures implemented on-site."

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