

Tehran plunged into darkness by smoke from **burning oil**

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● During the 12-day war last June, around six million residents left Tehran

● Israel's military confirmed it had struck "fuel storage facilities in Tehran"

AFP | Tehran, Iran

Residents of Tehran woke up yesterday morning to find it was still dark outside, an apocalyptic sight created by thick black smoke billowing from oil depots hit by Israeli strikes.

With the Sun blotted out, disoriented people in the Iranian capital had to turn on their lights to see through the gloom.

"I thought my alarm clock was broken," a driver in his fifties told AFP on condition of anonymity.

By 10:30 am local time (0700 GMT), cars still needed their headlights to drive along Valiasr Street, a main thoroughfare that runs north-south through the city.

Black smoke from the burning fuel depots mingled in the



fire erupting at an oil depot in Iran's capital Tehran

sky with heavy grey rain clouds, compounding the murky atmosphere.

The smoke spread across the sprawling city, normally home to more than 10 million people.

The fuel depot strikes are the first time Iranian oil infrastructure has been targeted during the nine-day war.

The fighting began when the United States and Israel launched attacks on Iran last weekend and has since engulfed the Middle East.

Israel's military confirmed it had struck "fuel storage facilities in Tehran" that it said were

used "to operate military infrastructure".

Four oil depots and a petroleum logistics site in and around Tehran were hit. Local authorities said six people were killed and 20 wounded at one of the sites. AFP could not independently verify these numbers.

At one of the depots, the oil was still smouldering on Sunday. Flames were flaring up and crackling more than 12 hours after the strikes, an AFP reporter witnessed.

Israel also attacked fuel depots in Tehran during a 12-day war last June.

Toxic fumes

On the streets of Tehran, security forces directed traffic while wearing special coats and masks to protect themselves.

Authorities warned that the noxious fumes can cause breathing problems and irritate eyes, urging residents to stay indoors.

The Iranian Red Crescent Society said that "significant quantities of toxic hydrocarbons, sulfur and nitrogen oxides" were released into the air.

The windows of nearby buildings were blown out by the force of the explosions.

Dozens of kilometres away from the fuel depots, residents swept their balconies, which were covered by a mix of rain and puddles of fuel.

Tehran's governor Mohammad Sadegh Motamedian said on Sunday morning that fuel distribution in the Iranian capital has been "temporarily interrupted".

"The problem is being resolved," he added.

For now, each vehicle in Tehran is limited to 20 litres of fuel.

On Sunday morning, there were long lines at petrol stations, with AFP counting

around 40 cars queuing at one.

Sunday is the first day back to work in Iran after a week-long holiday was declared following the death of supreme leader Ali Khamenei in US-Israeli air strikes last weekend.

During the 12-day war last June, around six million residents left Tehran, according to local media.

However this time around, the majority have stayed. The United Nations estimated on Tuesday that around 100,000 people had fled the capital. In the first days after the new war broke out, Tehran had resembled a ghost town.

But this is no longer the case, with more pedestrians and cars now venturing onto the streets.

On Sunday, roughly half the shops in Tehran were open -- even in the darkness.



Iran holds about 208 billion barrels of proven oil reserves, making it the third-largest holder of oil reserves in the world and accounting for roughly 12% of global reserves.

Why have 1,000 ships at times **lost their GPS** in Mideast?

AFP | Washington, United States

The global positioning system (GPS) capabilities of cargo ships, oil tankers and other vessels stuck in the Middle East because of the widening war are likely worse than those in your cell phone.

Experts say this deficiency explains why since the start of US-Israeli strikes, the jamming of satellite navigation signals has left about 1,000 ships in the Gulf and the Gulf of Oman unable to determine their location, either momentarily or continuously.

Dimitris Ampatzidis, a senior risk and compliance analyst for the energy market intelligence firm Kpler, told AFP the number represents about half of the vessels in the area.

The vast majority of those ships are located off the United

Arab Emirates and Oman.

A satellite navigation system is made up of a constellation of satellites that send signals with the time to Earth, allowing the receiver to determine its precise location.

Modern smartphones receive signals from four groups of satellites: the American, European (Galileo), Russian (GLONASS) and Chinese (BeiDou) Global Navigation Satellite Systems (GNSS).

Most cell phones now use two GPS frequency bands -- one that is older and fainter, and a second that is newer and stronger.

But "many ships only listen to the original civilian GPS signal, which is called the L1 C/A signal. It's the one that's been around since the early 1990s for civilian use," Todd Humphreys, an engineering professor at the

University of Texas at Austin, told AFP.

Most ships are thus unable to rely on the BeiDou or Galileo systems in the event that a GPS is jammed.

The situation is even worse for airplanes, due to aviation regulations.

"You will not find any aircraft flying in the world today whose built-in GPS receiver is capable of tracking and interpreting signals other than the GPS L1 C/A. So it's out of date by 15 years," Humphreys said.

Spoofing

Jamming a GPS signal is "not that complicated," said Katherine Dunn, the author of an upcoming book of the history of GPS, "Little Blue Dot."

All one needs is "another radio transmitter that can

broadcast on the same frequency, but louder," she said, which creates "a wall of mush."

Spoofing is more sophisticated -- and more dangerous, affecting a ship's Automatic Identification System, or AIS.

Every vessel transmits a message per second over a universal radio frequency that announces its identity, destination and position.

Spoofing manipulates that system, causing the affected ship to send a fake, or even nonsensical, location -- meaning that ships could appear to be on land in Iran or the Emirates.

Clocks

Today, GPS signals are not just used to determine location; they also power onboard clocks, radar systems and speed logs,

Dunn said.

So even if the ships off the Emirates or Kuwait were protected from drone fire and escorted through the Strait of Hormuz, navigating without a GPS would be perilous.

"Given the size of the ships, electronic assistance has become necessary to steer them," said one merchant marine captain who has sailed on cargo ships around the world.

Crews must "resort to using 20th-century instruments -- radar or visible landmarks," he told AFP on condition of anonymity.

Defensive jamming

Signal jamming is undoubtedly being used both offensively and defensively. Gulf states are directing their systems towards their own shores to ward off

Iran's satellite-guided Shahed drones -- at the cost, deemed acceptable, of disrupting their own lives.

Israel did the same thing in 2024, as did Iran after its 12 days of conflict with Israel last year.

"Even if their own air traffic or maritime traffic or their delivery drivers or their dating apps are affected by GPS jamming and spoofing, they'll do it, just like Israel did. Israel did it for a year in 2024," Humphreys said.

For air and sea navigation, start-ups are developing alternative technologies using Earth's magnetic field or inertial navigation.

But for ships today, navigating without a GPS is still far in the future.

