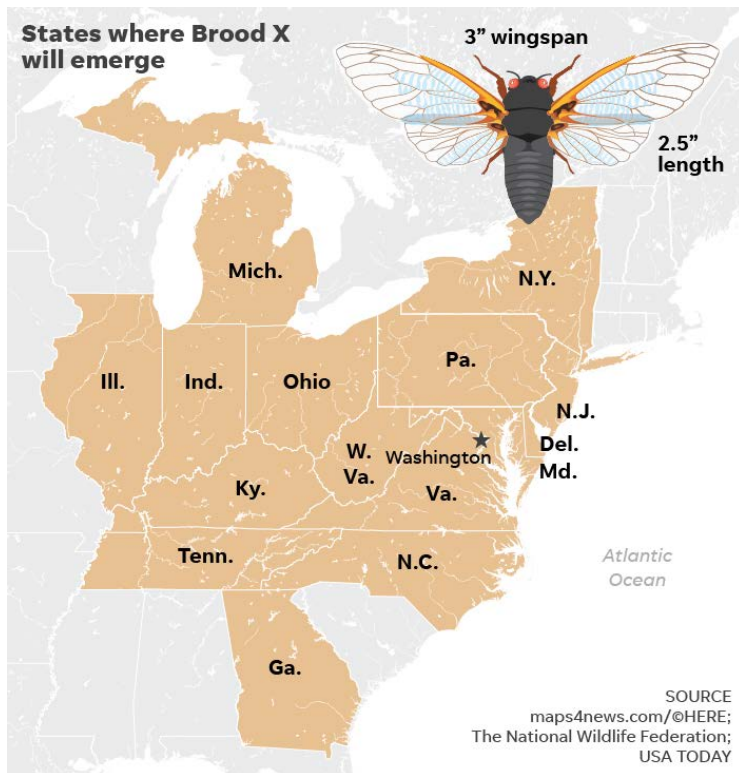


Cicadas to Emerge by The Trillions in 16 States In 2021

Are Your Cooling Systems and Air Handling Units Protected?



Did you ever wonder what insects make that loud buzzing sound in trees during the daytime in the summer? Well, it's a widely heard but rarely seen kind of insect called a cicada. The ones you hear every summer are "non-periodical", which means some appear every year despite requiring several years to develop to adulthood. The "Periodic Cicadas" are different, and when they emerge as adults can overwhelm everything in its path including cooling towers, condenser coils, fan units and air-handling units – they emerge in 13 and 17-year intervals in large and generally non-overlapping geographic regions ranging from the mid-central US to the Mid-Atlantic States and up through the Northeast.



Because of this separation in time and place, their various widespread populations are called broods - 15 active broods are now recognized in the US. The single largest 17-year brood, known as "Brood X" (X, the Roman numeral for 10), is expected to appear in 16 states in 2021.

You can identify periodic cicadas by the combination of large black bodies, reddish eyes and reddish veins in their wings. If your business is in a region affected by Brood X, you need to begin planning now how you will deal with the potential problem; It can have a drastic impact on your operation if you wait until it is too late.

When periodic cicadas emerge, their population density is enormous and can exceed 1 million per square acre. If your facility is in a brood-infested region and your cooling towers, evaporative condensers and air-handling units are in or near naturally forested areas or surrounded by trees, your system is at risk. These otherwise harmless insects can be sucked into your equipment while flying past the draft zone of the intake opening as they make their way to the nearest tree.

Is Your System at Risk?

Where your equipment is located will determine your company's risk. Units located on rooftops and away from trees or in the middle of a paved area are less likely to encounter cicada-related problems than those that are near the ground or near trees or woody plants. If your facility is immediately adjacent to or nestled away in affected wooded areas, your systems are likely to be at risk.

Cicadas are about the size of your thumb, measuring about 0.5" wide and 1.5 – 2" long with a 3" wing span. Three species usually emerge mixed together in the same area. Their songs are quite different, and they vary in average size. They are expected to emerge from the soil in early May and June, and are active as adults for 30 to 50 days. During their short time above ground, they feed day and night by sucking the sap of trees and other woody plants. They do not chew or bite leaves or people. The songs of males (only the males sing) promote mating. After mating, females lay hundreds of eggs in woody tissue by making slits in the bark of pencil-sized twigs. Shortly after mating and laying eggs, the adult cicadas die, leaving massive numbers of carcasses everywhere. In about nine weeks, the eggs hatch and pale ant-sized baby cicadas drop from the twigs to the ground, where they burrow underground and remain there for 17 years, sucking sap from the plant roots.

What Can Happen



Cicadas in Cooling Tower Basin



Cicadas Swarming RTU Exhaust Fan

As one facility engineer at a Cincinnati manufacturing plant put it, "The last time the periodic cicadas emerged, we had to clean our cooling tower strainers and blow-down valves several times per day. If we didn't clean the strainers, we would lose our chiller due to high-pressure conditions, and it would shut down our cooling system. We had to maintain our cooling towers around the clock just to keep our systems operational."

If your facility is in an affected area and you do not anticipate emergence of the cicadas, it can impact your annual maintenance budget and have an economic impact on your business.

Cooling towers and Evaporative Condensers – Infiltration can:

- Clog cooling tower fill, reducing airflow.
- Overwhelm sump water, increasing organic content and increasing bacteria count.
- Increase water treatment chemical consumption and associated cost.
- Clog strainers, reduce flow rate and impact chiller efficiency.
- Clog solenoid blowdown valves in the open position, resulting in increased makeup water and water treatment chemical consumption.
- Clog heat exchangers, reducing flow rate and heat transfer efficiency.
- Cause production downtime, lost productivity and missed shipments.
- Increase maintenance cost.

Air-handling units also can be affected - Infiltration can:

- Clog internal filters.
- Load intake air ducts with insect debris.
- Increase number of filter changes.
- Reduce internal air quality.
- Cause excessive service and maintenance costs.

In short, periodic cicadas can cause real havoc to businesses that are not prepared.

How to Prevent Trouble

Determine if your county is an affected region. If you had a problem the last time they emerged and there has been little development or disruption to the soil or forested area around your operation, then you are likely to have trouble again.

If you are in an affected region, identify your most critical cooling and air movement systems and consider setting extra maintenance dollars aside. Systems that support production or other revenue-generating operations are key. Anticipate extra maintenance, service, increased water treatment chemical consumption, frequent filter changes on air-handlers, overtime or investment in preventive solutions.

Research your alternatives. Water filtration and air-intake filtration are two good options. Water filtration also known as side-stream filtration for cooling towers will help you to manage the insects and other airborne debris **after** it has entered the cooling tower but only manages what actually reaches the basin water – it however doesn't protect the fill, while air-intake filtration systems (**Commonly called "Cottonwood Filter Screens"**) are typically your best solution because they're engineered for HVAC high volume/velocity air movement and mount to the outside of the cooling tower or any other air-intake openings (AHU's, RTU's, Intake Louvers, Dry Coolers, etc.) and stop the cicadas and other airborne debris its point of entry thus, protecting the entire cooling and air movement system.

Anticipation and prevention are key. Knowing if you will be affected and developing a plan of action are important. Taking a preventive approach is usually more cost effective than simply reacting when the problem occurs. Prevention will not only save you money, but will prevent down-time.

What Not to Do. When airborne debris becomes a serious problem, the natural tendency is to look for something to cover the intake opening to prevent entry of the debris. **Never use window screen, shade screen, pet screen roll filter media or mesh** purchased from a hardware store to cover air-intake openings on cooling and air movement systems as these materials are not designed to allow proper airflow and can damage fan motors and compressors by drastically restricting air-flow increasing static pressure and impede cooling efficiency. When using Cottonwood Filter Screens engineered for use on mechanical cooling equipment, they will typically have less than 0.1" w.g. of static pressure and provide you with excellent long-term benefit well after the Cicadas have gone.

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Cottonwood Filter Screens Stopping small insects



Dry Coolers



Rooftop Units



Cooling Towers



Air Intake Louvers