Is it a bird, a plane - no, it's ... a supernova?

The super-giant star Betelgeuse may be going supernova in the near future. What does this mean for Earth and the human race?

PRACTICAL SCIENCE WITH PHIL FREDA

Recently, I was driving to school while listening to the radio and heard the gang on 93.3 WMMR's "Preston and Steve" discussing some recent news that perked my interest.
They were discussing a recent news release concerning a possible and imminent supernova of the red giant star Betelgeuse (pronounced just like the 1988 movie "Beetlejuice," starring Michael Keaton and directed by Tim Burton).
The "Preston and Steve" crew were panicking whether this meant the end of Earth, and their radio show for that matter.

When I typed in "Betelgeuse Supernova" in Google, I received results like "2012 cataclysm" and "apocalypse soon."

I knew I had to do some research to ease everyone and shed some light on the matter.

Introduction to stellar lifecycles
A star is a basically a large nuclear fusion reactor that constantly squeezes hydrogen atoms in helium. The energy released by stars (like our sun) through these reactions provide life sustaining heat and light.

Stars, like us, go through a life cycle.

Our star is approximately in the middle of its life, and has about another 5 billion years or so to go. Stars will stay in main sequence (fusing hydrogen into helium) until hydrogen fuel is exhausted.

According to the ASPIRE (Astrophysics Science Project Integrating Research and Education) website, most stars will start to fuse helium into carbon when hydrogen is exhausted. This causes the star to swell into a red giant phase. The Star Betelgeuse is currently in this phase. After helium is expended, the star will start to burn carbon.
At this point, the star enters its death throes. The size of the star determines how it will die.

- *Low-mass stars (the Sun):*
  After the red giant phase, these stars collapse and become white dwarfs. These small bright remnants are the final stage small, low-mass stars. Eventually (after billions of years), white dwarfs cool to become black dwarfs.

- *Medium-mass stars (Beta Pictoris):*
  These stars also go through a red giant phase. These stars collapse, but go through an additional phase. As a result of the core collapsing, a massive shockwave is emitted, and the other layers of the star are expelled. Most of the heavy elements on the Earth, such as gold, iron and uranium, are formed this way.

  Supernovas are massively powerful and shine brighter than entire galaxies. The remnants left over by these stars are neutron stars and pulsars.

- *Large-mass stars (Betelgeuse):*

  These are the heavy hitters. After the red giant phase, these stars also collapse and create massive supernovae. Instead of forming a neutron star or pulsar, these stars can cause a massive distortion in space known as a black hole.

  This is what will happen to Betelgeuse when it dies.

So what does this mean for us on Earth? Is it dangerous? Will we be here for the next Super Bowl?

A bomb or a dud?

According to recent articles on Discovery News and CBS News, we shouldn't have anything to worry about. First of all, astronomers cannot determine exactly when the explosion will occur. Current estimates place the possible explosion anywhere from today to a million years from now!

That's right, a million years.

The star is so far away that the apparent loss of mass of the star may mean nothing at all. It may be a natural cycle of the star's life.

How far away is Betelgeuse? Betelgeuse is approximately 600 light years away. That means it takes light 600 years, traveling at 186,000 miles-per-second, to reach Earth.

Not exactly a walk in the park. According to the articles, a star has to be 25 light years away or nearer to be a threat. Betelgeuse is 24 times that distance.

If you are fortunate enough to be alive for the death of this giant, it will be quite a show. Astronomers estimate that the supernova will be as bright as the moon at night.

Imagine looking into the night sky and seeing two bright orbs. The effect would last a few weeks as the matter is thrown about.

Additionally, it would be a great opportunity for scientific study.

Remember though, since Betelgeuse is 600 light years away, the actual image of the explosion would have happened 600 years prior. In other words, if we witnessed the explosion tomorrow, it would have actually transpired in the early 1400s!

Rest easy, Upper Moreland! We have nothing to worry about — at least from Betelgeuse.

There are many other things in the heavens to be more worried about, including asteroids, gamma-ray bursts, comets and black holes. I hope I didn't scare you, but our planet floats about in a vast, scary, dark, beautiful ocean called the universe.

Think about it.