The increasing use of nanotechnology produces large amounts of nanoparticles (NPs) which inevitably will end up in the environment. Their toxicity is almost unknown, and only recently the scientific community has started to study their potential effects on animals and aquatic ecosystems. By adopting standard FETAX procedures, lethal and teratogenic potential of CuO, ZnO and TiO$_2$ NP suspensions were evaluated. Embryos were exposed for 96h to increasing concentration of NPs (10, 100 and 500 mg/L) from blastula stage, with daily renewal of testing media. At the end of the test, larvae were screened for vitality and malformation. Paraffin embedded specimens were sectioned and then analysed using a confocal microscope for histopathology and, by reflection mode, for the NP’s visualization. The transmitted light dark-field image incorporates a signal from the entire population of NPs in the sample including any contaminating dust particles on the glass surface. The confocal reflection microscopy image, in contrast, records only the in-focus signal of the NPs, giving hence a more accurate measure of the sample. Ultrathin sections of NP exposed embryos were also observed under an Energy Filtering TEM (EFTEM) to characterize and localize NPs at sub-cellular level, looking also for the possible ultrastructural lesions induced. No significant mortality was observed, except in the 500mg/L CuO group. Only CuO exposed specimens displayed a positive trend in the malformation rate with increasing concentration, the highest producing 78% of malformation. The highest ZnO concentration produced many malformations as well, being mainly an abnormal development of intestinal loops and damages at the intestinal mucosa. TiO$_2$ did not cause embryo mortality and significant malformations. For all tested NPs uptake seemed to happen mainly at gut epithelium, but other organs and tissues are also involved. Data from EFTEM confirmed this, also suggesting different mechanisms involved into the alteration of larval development.